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EASTERN MARGIN OF JEMEZ PLATEAU FROM THE PUEBLO OF SANTA CLARA

J. C. Brannen

U. S. SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 32

ANTIQUITIES OF THE JEMEZ PLATEAU, NEW MEXICO

BY

EDGAR L. HEWETT



WASHINGTON
GOVERNMENT PRINTING OFFICE
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ANNOUNCEMENT

The present bulletin is intended as the first of a series treating of the antiquities of the public domain, and designed to supply the very general demand for fuller information on this subject than has yet been furnished. Recently widespread interest in these remains has been aroused, partly as a result of their rapid despoliation by relic hunters and inexperienced explorers, and a vigorous movement for protective measures has been organized. From time to time during the last few years efforts have been made to perfect and bring to the attention of Congress a suitable provision for the preservation of the antiquities under consideration and a measure generally approved by the scientific institutions of the country has recently been presented to that body.[a] Meanwhile the several departments of the Government having jurisdiction over the lands on which the ruins are situated have recognized the need of adequate protective measures, and have taken decisive steps looking toward the preservation of the ruins and their proper utilization in the interest of history and science.

The greater number of these antiquities are situated (1) on the national forest reserves, (2) on the Indian reservations, (3) on the unappropriated public lands. The first class is thus under the jurisdiction of the Department of Agriculture and in the immediate custodianship of the Forest Service. The other two classes are under the jurisdiction of the Department of the Interior, the second being under the immediate custodianship of the Office of Indian Affairs and the third under that of the General Land Office. The departments mentioned have issued stringent orders prohibiting the excavation of ruins or burial mounds and the carrying away of archeological specimens without permission of the Secretary of the department having jurisdiction over the lands involved, and also prohibiting traffic in specimens that have been collected on the reservations. Furthermore, the issuance of permits has been restricted so as to include only competent archeologists working under the auspices and for the benefit of reputable scientific or historical institutions, or organizations having adequate museum facilities and provision for permanent custodianship of scientific collections.

The Bureau of American Ethnology has been called on from time to time by the departments for information concerning the location and character of certain ruins and the qualifications of persons and institutions to conduct investigations among them, and it is

[a] This measure became a law in June, 1906; for its provisions see Appendix A, page 54.

partly with the view of supplying more fully the information required in the practical work of supervision that the present publications are undertaken. The researches of this Bureau, extending over the last quarter of a century, have resulted in the accumulation of a vast body of information relative to prehistoric remains of the tribes, and this has been embodied in reports most of which are out of print. Notwithstanding the constant demand for these works, it is not possible to republish them, and the series of bulletins now contemplated will in a measure take their place; at the same time these handy volumes will serve for the use of forestry officers, Indian agents and police, Land Office agents, and others having official custodianship of the ruins, as well as for persons desiring to visit the sites or to undertake archeological researches. The bulletins will be prepared by the best qualified authorities on the several areas of which they treat, and will be accompanied by maps giving the sites already located and affording the means of making corrections and additions. When sufficiently perfected, the data embodied in these maps will be incorporated in the general archeological map of the United States which is in course of preparation by the Bureau.

The present bulletin, by Edgar L. Hewett, embraces the very important culture district in New Mexico of which the Jemez plateau is the central physiographic feature. Mr Hewett has in hand a second number, to include the region drained by the northern tributaries of the Rio San Juan in Colorado and Utah, an area of which the Mesa Verde and its wonderful cliff-dwellings form the center of interest. Dr J. Walter Fewkes is engaged in the preparation of a third bulletin on the vast area included in the drainage of the Little Colorado, and Dr Walter Hough has taken up the antiquities of the upper Gila valley. Other numbers will follow as rapidly as possible, until the whole Pueblo area is adequately presented.

This series of publications, however, must be regarded as essentially preliminary, since the available data, although adequate for certain localities, are still fragmentary, and since much careful exploration is necessary before the subject can be monographically treated. In view of these facts it is most desirable that information should be obtained from every available source, and the Bureau especially solicits the aid of correspondents in correcting the data published and in locating and describing additional sites of all kinds. A card catalogue of archeological sites of whatsoever character is being prepared, and cards indicating the nature of the data required will be furnished by the Bureau on request.[a]

W. H. Holmes, *Chief.*

[a] A specimen record indicating the desired data is presented in Appendix *B*, page 54.

ANTIQUITIES OF THE JEMEZ PLATEAU, NEW MEXICO

By EDGAR L. HEWETT

INTRODUCTORY NOTE

The region to which the name Jemez plateau is here applied lies in the northern central part of New Mexico on the west side of the Rio Grande del Norte. The greater portion of the plateau is occupied by the Jemez forest reserve. Six Indian reservations or grants border on or lie partly within its limits; these are the San Juan, Santa Clara, San Ildefonso, Cochiti, Santo Domingo, and Jemez. Of the remaining portion all that is not embraced within private land grants and small holdings is public land. The ruins referred to in this bulletin are distributed as shown on the map (pl. XVII). In many cases locations are only approximate, owing to the lack of authoritative surveys. The map was prepared by the Forestry Office, the data being furnished by the Forest Service of the Agricultural Department, the General Land Office and the Geological Survey of the Interior Department, and by the War Department, with corrections and additions by the author. The archeological features of the map are the result of investigations of the Bureau of American Ethnology, and are to be revised and extended as soon as the necessary data are obtained.

PHYSIOGRAPHY OF THE JEMEZ PLATEAU

The Jemez plateau may be said to extend from a point almost directly west of Santa Fé to the Colorado line, a distance of about 90 miles. It is limited on the west by the Rio Puerco and has an extreme breadth of about 60 miles (see map, pl. XVII). The area is divided unequally by the Rio Chama, which flows through it from northwest to southeast. The backbone of the northern or smaller portion is the Tierra Amarilla mountains. With this region we have little to do in this paper, as it is devoid of any conspicuous ruins except in the southern part, that is, in the Rio Chama drainage.

South of the Chama and crowning the plateau is a great complex of mountains loosely known as the Jemez. There are two important ranges. The western forms the watershed between the Rio Puerco and the Rio Jemez, and the eastern forms the Jemez-Rio Grande divide.

The leading topographical features of the entire area are mountains, characterized by massive rounded contours, the highest peak attaining an altitude of 11,200 feet; flat mesa lands of an altitude of 7,000 to 8,000 feet, cut up by innumerable canyons from 100 to 1,500 feet deep, the mesas sloping gently from the mountains to the valleys, on whose borders they terminate in bold perpendicular escarpments (pl. 1); and narrow sandy valleys at altitudes ranging from 6,000 to 7,000 feet. The mountains are for the most part well forested with pine, spruce, fir, and aspen. No peaks extend above the timber line, as is popularly supposed, the baldness of their tops having been caused by fires. The mesas are rather thinly covered with piñon, juniper, and cedar interspersed with many small open parks. The valleys naturally produce sage, chaparral, and cactus, and can be adapted to agriculture and fruit-growing by means of irrigation.

There are but few permanent streams throughout this area. Precipitation ranges from 10 to 15 inches annually. There are a high percentage of cloudless weather, little snow except in the high mountains, excessive evaporation, summers never excessively hot or winters very cold, an atmosphere of marvelous clearness and dryness, and generally speaking, a climate unsurpassed for salubrity. The country is poor in game and fish, nor are wild fruits or other natural food products abundant.

This region became the seat of a considerable population in prehistoric times and almost innumerable ruins of the ancient civilization are distributed through the Pajarito plateau, the Chama drainage, and the Jemez valley.

The culture that developed here was evidently molded largely by the physiographic conditions above described. Being deficient in game and other natural food supply, the country did not offer an inviting prospect to a nomadic people, while, on the other hand, the adaptability of soil and climate to agriculture, and the natural protection from enemies afforded by cliffs and canyons rendered it attractive to a people of sedentary inclinations. The selection and preparation of ground for agriculture naturally tended to permanency of abode, and the peculiar geological conditions as naturally determined the character and construction of the dwellings of the people.

ARCHEOLOGICAL REMAINS

The ruins of prehistoric habitations, occurring in vast numbers throughout the Jemez plateau, are of two general classes, cliff-dwellings and pueblos.

The cliff-dwellings of this district are quite generally of the excavated type, whence is derived the term "cavate dwellings," which is sometimes applied to them. This type embraces a wide range of domiciles. The most primitive is the natural open cave, formed principally by wind erosion and only slightly, if at all, enlarged and

shaped by excavation (pl. II, *a*). A considerable advance over this type is shown in the wholly artificial dwelling excavated in the perpendicular face of the cliff (pl. II, *b*), the front wall being formed of the natural rock in situ. Numerous variations occur as shown in the illustrations, the most important of which are those with cased doorways (pl. II, *c*) and those with front wholly or in part of masonry (pl. II, *d*, *e*, *f*). It is evident that when in use the majority of these dwellings were rendered much more commodious by the building of porches, as shown in the restoration (pl. III, *b*) in front of the excavated rooms. In some cases complete houses were built upon the sloping talus, as shown in the restoration of Tshirege (pl. III, *a*), the excavated rooms at the back being used mainly for storage and burial crypts. These cliff-dwellings occur in vast numbers in the southern faces of the tongue-like mesas (potreros) of volcanic tufa that extend out from the base of the mountains toward the valley on what is known as the Pajarito plateau, the table-land lying between the Jemez range and the Rio Grande. They occur also in similar formations in the mesas that are drained by the southern and western tributaries of the Chama. Occasionally they are found in cliffs with eastern exposures, but they very rarely face either north or west.

The pueblo ruins are those of the many-chambered community houses which are found upon the mesa tops and in valleys independent of any support from natural cliffs. They exist in large numbers on the Pajarito plateau from Cochiti north to the rim of the table-land overlooking the Chama valley; in the valleys of the northern tributaries of the lower Chama; on the mesas both north and south of the upper Chama, particularly in the Gallinas "bad lands;" and in the Jemez valley.

The pueblo structure is invariably a cluster of rooms or cells. There are numerous variations of extension and arrangement. In some cases the rooms are arranged irregularly and in others they have a definite alignment of common wall.[a] The smaller pueblos were but one story high, while the majority of the large ones were from two to four stories. There was a general tendency to build them in quadrangular form. Many single-chambered ruins are found in the vicinity of the pueblos. These were for the most part simply camps or lookouts, similar to those now used by the Pueblo Indians in summer.

Petroglyphs or rock pictures are numerous throughout the districts, especially so on the Puyé cliffs in Pajarito park and in the Rio Grande valley between La Joya and Embudo. Fine specimens are to be seen also at the mouth of the Canyones overlooking the Chama. The illustrations here presented (pl. IV) give a fair idea of the range of designs. While some of these represent nothing more than idle picture-making, perhaps most of them are of serious totemic, legendary, and religious significance.

[a] The accompanying plans of pueblos represent only an approximation to the arrangement and extent of the rooms.

THE ANCIENT INHABITANTS

Naturally the first question that arises in the mind of every intelligent visitor to these cliff-dwellings, is: Who were the people who built and lived in these peculiar homes? It has been customary to answer that these were simply the earlier homes of the Pueblo tribes now living in the villages near by. This answer must, at least, be qualified. It was accepted by the early explorers on the evidence of surface appearances and the traditions of the living Pueblo Indians. Subsequent observers merely followed the lead of their predecessors. Extensive excavations made in recent years have brought to light more reliable evidences. Large collections of the ancient pottery have been compared with that of the modern Pueblos and but few similarities found in form, color, mode of ornamentation, and symbolism. This in itself would not be conclusive proof of lack of identity between the makers, but it is supported by the indisputable evidence of the anatomical characters of the people. The living Pueblo Indians are predominantly (50 to 75 per cent) brachycephalic, or short-headed people; while the ancient people of the cliffs, as shown by the examination of a large collection of skeletal remains excavated by the writer at five different sites on Pajarito plateau, were practically 100 per cent dolichocephalic, or long-headed. The noticeable proportion of long-headed people found among the present Pueblo Indians probably represents an infusion of blood from the ancient cliff-dwelling tribes. In the light of the mass of evidence now at hand the answer of the present author to the question, Who were the inhabitants of the cliff-dwellings and ancient pueblos of this plateau? would be as follows: The ruins herein described were the ancient habitations of Indian tribes some descendants of which are doubtless now living in the adjacent valley of the Rio Grande and its tributaries, but most of whom are probably dispersed widely over the southwest. In every existing Tewa tribe (San Juan, Santa Clara, San Ildefonso, Nambe, and Tesuque) it is claimed that certain clans may be traced back through one or more migrations to the ruined pueblos and cliff-villages of the Pajarito plateau. The same may be said of the Keres villages (Cochiti, Santo Domingo, San Felipe, Santa Ana, and Zia), while it is known that the earlier Jemez people and their kindred occupied sites farther up the valley well into the historic period.

The pueblos and the cliff-houses were occupied during the same period and by the same people. The age of these ruins may be approximately fixed. The San Ildefonso tribe has occupied its present site since before the Spanish conquest, we may say four centuries. On the opposite side of the Rio Grande, a mile west of the present San Ildefonso, are the ruins of Perage. This is the village last occupied by some of these people prior to their removal to Powhoge, their

present site. Their traditions indicate a residence at this site of as great a duration as at their present location. Archeological evidences would reduce this period somewhat. It would thus appear that the San Ildefonso have lived in the valley for from six to eight centuries. The next earlier site of at least one or two clans of this tribe was on the plateau, at the great pueblo and cliff-village of Otowi, where there is every evidence, fully sustained by the traditions of the people, of long-continued residence. The history of this village is almost a repetition of that of each one of the Tewa villages. It appears that the abandonment of the cliff and pueblo villages of the plateau occurred from six hundred to eight hundred years ago as a result of climatic modifications by reason of which the hardships of living at these sites became unendurable. The transition from plateau to valley life was not necessarily sudden. There is no evidence of any great simultaneous movement from all parts of the plateau. The change was probably accomplished within a generation or two, one village after another removing to the valley or to more distant places, as the desiccation of the plateau proceeded. There is at present not a single stream on the east side of the Jemez plateau between the Chama and the Jemez that carries its water to the Rio Grande throughout the year. The ancient Tewa people were, as are their modern successors, agriculturists; hence, their living was dependent on the water supply. Only the most primitive style of irrigation was practised and there is every evidence that the region was never rich in game or natural food products of any kind.

It must be remembered that the foregoing statements refer to the period of continuous residence on the plateau. There have been from time to time in comparatively recent years sporadic reoccupations of these ancient villages by clans from the valley, as that of Puyé by the Santa Clara Indians, and of Kotyiti, or Pueblo Viejo, above the Cañada de Cochiti, by the Keres after the Pueblo rebellion of 1680. These reoccupations were attended with considerable rebuilding and repairing of ancient structures; thus may be accounted for the improved irrigation system at Puyé, which is a work of the last occupation and far in advance of anything that was known to the ancient inhabitants of any part of the plateau.

DISTRIBUTION OF THE RUINS

The ruins of the entire area considered in this bulletin are distributed in three geographical groups:

I. Ruins of the Pajarito plateau.
II. Ruins of the Chama drainage.
III. Ruins of the Jemez valley.

I. Ruins of the Pajarito Plateau

This name, the Pajarito plateau, proposed by the writer some years ago and now generally adopted, is applied to the table-land on the eastern side of the Jemez mountains. The name is usually confined to the region lying east of the foothills, which is bordered on the east by the Rio Grande, on the north by the Rio Chama, and on the south by the Cañada de Cochiti. It is roughly crescent-shaped and is about fifty miles long with a width varying from ten to fifteen miles. It is boldly defined on all sides. A considerable portion of the plateau was covered originally by a sheet of volcanic tufa, varying in thickness from 100 to 1,000 feet. The source of this material was the now extinct volcanic cones of the Jemez range. Rudely dressed from the somewhat regular blocks into which it is readily broken, it furnished a durable and easily worked building material for the primitive inhabitants of the plateau; while caves, both natural and artificial, afforded comfortable and secure abodes with the expenditure of but little labor. In considering the ruins of this area it will be convenient to defer the description of the succession of large pueblos which occupy the northern rim of the plateau, including them with the group situated in the Chama drainage.

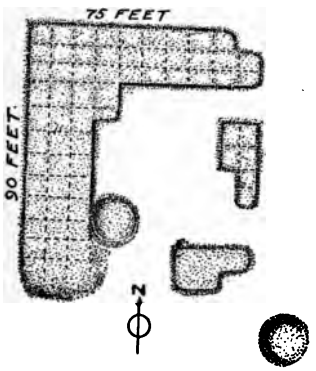


Fig. 1.—Ground plan of Shufinne.

The Pajarito plateau group begins then with the ruins in the vicinity of Santa Clara creek (see map, pl. xvii), a few miles west of the Indian village of Santa Clara. This section was visited and briefly described by Stevenson, Powell, and Bandelier in the early eighties. It has been made the subject of numerous popular articles, among which may be mentioned those of Lummis and Wallace. All the pueblos on the Pajarito plateau were built of stone. Only the most conspicuous ruins can be pointed out in this paper. A multitude of "small house" pueblos and innumerable cliff-dwellings of minor importance are passed without notice.

No. 1. Shufinne (fig. 1).—This is a small pueblo ruin with an accompanying cliff-village, situated on a high mesa which rises abruptly above the plateau on the north side of Santa Clara canyon, about ten miles west of the Santa Clara village. The site is a most picturesque one, visible in some directions from a distance of twenty-five miles. The pueblo was rather inferior in construction and is reduced to low mounds. The cliff-dwellings are quite generally broken down.

No. 2. Puyé.—This settlement consisted of the large pueblo on the

top of Puyé mesa (pl. v, *b*) and an extensive tributary cliff-village (pl. v, *a*). The pueblo was a huge quadrangular structure (fig. 2), next to Tshirege the largest in the park. It was the most compact, the most regular of all the large pueblos. The quadrangle had but one entrance, this being in the eastern side, near the southeastern corner. The four sides are so connected as to form practically one structure, though it is not to be inferred that this was all built at one time. It presents no new constructive architectural features.

In some rooms of this building there are evidences of occupancy after once having been abandoned. Doors and windows previously used are found closed with masonry and plastered over. The last floor is laid upon a foot or more of débris accumulated upon an original floor and not removed in the process of remodeling. The pottery between these two floors is noticeably different from that above the upper floor. Round kivas, mostly subterranean, are found both inside and outside the court.

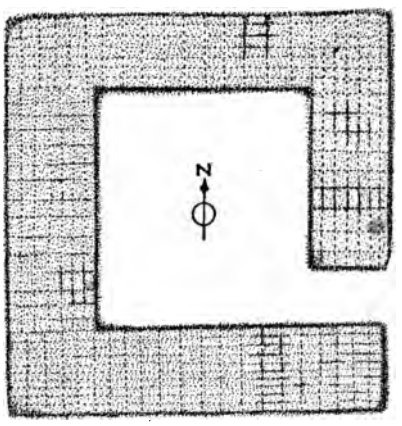


FIG. 2.—Ground plan of Puyé.

The cliff-village at Puyé was a very extensive one. The mesa is a mile and a quarter in length and a large portion of the south face is literally honeycombed with dwellings. A ledge midway up the face of the cliff divides it into two parts. In some places the lower part contains three levels of dwellings, the bottom series being, in many instances, below the talus. The dwellings above the ledge are more scattered, but are also disposed in three levels. They are not generally so well constructed as those in the lower part and are in a more ruinous condition. There is rarely communication between dwellings in different levels; when such connection exists it appears to be accidental. The porches illustrated in plate III, *b*, were a prevalent feature here. Two round excavated kivas are found in a ledge in front of the cliff. A number of caves of unusual size for this locality evidently served the purpose of kivas for the inhabitants of the cliff-village.

No. 3. Chipiwi.—This is a small pueblo of imperfect quadrangular form situated on a low mesa about two miles west and a little south of Puyé. It belongs to the older type of pueblos and was one of several minor villages, including Shufinne, that are said to have been absorbed into Puyé. An extensive cliff-village, consisting mainly of open-front dwellings, occupies the southern exposure of the mesa on which this pueblo is located.

No. 4. Navahú.—In the second valley south of the great pueblo and cliff-village of Puyé is a small pueblo ruin known to the Tewa Indians as Navahú, this being, as they claim, the original name of the village. This particular pueblo was well situated for agriculture, there being a considerable acreage of tillable land near by, far more than this small population would have utilized. The old trail across the neck of the mesa to the north is worn hip-deep in the rock by the attrition of human feet, showing constant long-continued use. I infer that here were the fields not only of the people of Navahú, but also of the more populous settlements beyond the great mesa to the north, where tillable land is wanting. The Tewa Indians assert that the name *Navahú* refers to *the large area of cultivated lands*. This suggests an identity with Navajó, which Fray Alonso de Benavides, in his *Memorial* on New Mexico published in 1630, says signifies "great planted fields." The pueblo is reduced to a mound (sketch plan, fig. 3).[a]

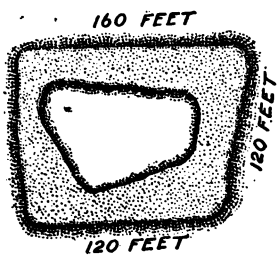


FIG. 3.—Ground plan of Navahú.

No. 5. Pininicangwi ("place of the corn-flour").—This is a pueblo considerably smaller than Navahú, situated in the same valley about a mile and a half farther from the mountains. It was built in the form of a complete quadrangle with a single opening on the east side (sketch plan, fig. 4). There was a kiva in the southeast corner of the court. The village was situated on a rounded knoll about 100 yards south of the arroyo.

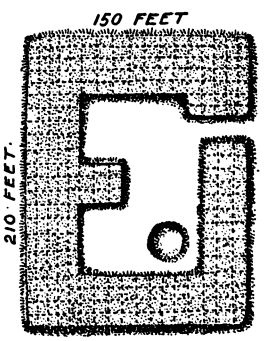


FIG. 4.—Ground plan of Pininicangwi.

No. 6. Chupadero.—This does not refer to any single site, but to a number of cliff-villages grouped within and about the Chupadero canyon. Here is a great network of deep gorges affording exceptional facilities for retreat from enemies. There is no pueblo ruin of any considerable magnitude in this section and the cliff-dwellings, numbering many hundreds, are of a quite temporary character.

No. 7. Perage.—This ruin is not on the plateau. It is situated on level ground in the valley a few rods from the west bank of the Rio Grande and a mile west of the Indian village of San Ildefonso. It is included here because of its relation to the ruins on the plateau, which rise in huge escarpments of conglomerate a half mile to the west.

This is the site occupied by certain clans of the Powhoge (San Ildefonso) Indians prior to removal to their present location, which

[a] See Hewett in *American Anthropologist*, v. VIII, no. 1, p. 193, 1906.

occurred some time before the Spanish invasion. It was the first valley site occupied by them on coming down from the pueblo and cliff-villages of Otowi, and illustrates their first efforts in building entire house-walls of adobe. Prior to this time adobe had been used

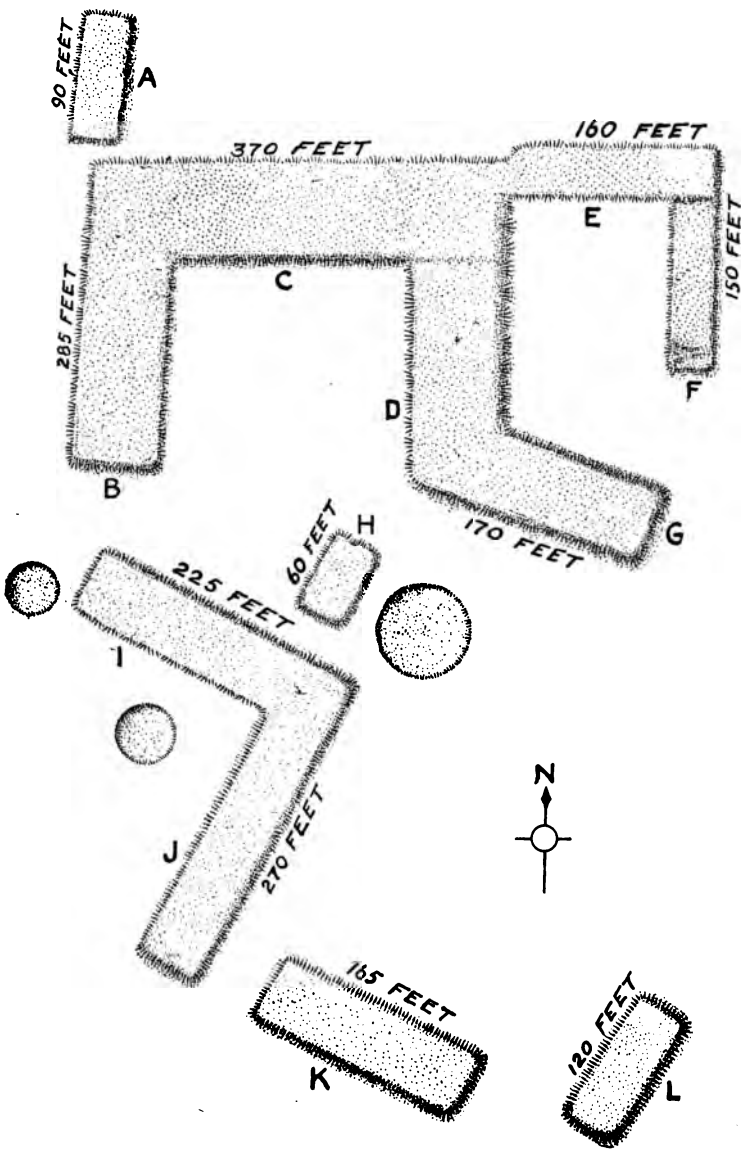


FIG. 5.—Ground plan of Perage.

by them simply as plaster. This village consisted of twelve sections (see plan, fig. 5), four of which (sec. *a*, *h*, *k*, *l*) were completely detached, two (sec. *i*, *j*) joined together in one building, and the remaining six (sec. *b*, *c*, *d*, *e*, *f*, *g*) connected, forming the main nucleus of the village

and inclosing two large courts. There are remains of three circular subterranean kivas in the village. Excavations at the site disclose no traces of Spanish influence. The pottery is more closely related to that of Otowi than it is to that of the present San Ildefonso.

No. 8. Otowi.—About five miles west of the point where the Rio Grande enters White Rock canyon are the remains of the extensive prehistoric settlement of Otowi. To reach it one ascends the mesa by following up the Alamo canyon from its confluence with the Guages. The top of the mesa is reached at the head of that part of Alamo canyon known as the Black Gorge. The first canyon entering the Alamo from the north above this point is Otowi canyon. Following this up for about two miles, a point is reached where the long narrow potrero bounding the canyon on the north is entirely cut out for a distance of nearly a mile, thus throwing into one squarish, open park the width of two small canyons and the formerly intervening mesa. From the midst of this little park, roughly a mile square, a view of surpassing beauty is to be had. Half a mile to the south the huge mesa which is terminated by Rincon del Pueblo bounds the valley with a high unbroken line, perhaps 500 feet above the dry arroyo at the bottom. The same distance to the north is the equally high and more abrupt Otowi mesa, and east and west an equal distance and to about an equal height rise the wedge-like terminal buttes which define this great gap in the middle mesa. Toward the four corners one looks into beautifully wooded gorges. The whole area is well forested.

The parallel canyons running through this glade are prevented from forming a confluence by a high ridge, the remnant of the intervening mesa. Upon the highest point of this ridge is located a large pueblo ruin which formed the nucleus of the Otowi settlement. In every direction are clusters of excavated cliff-dwellings of contemporaneous occupation and on a parallel ridge to the south are the ruins of one pueblo of considerable size and of seven small ones, all antedating the main Otowi settlement.

Two types of excavated cliff-dwellings are found at Otowi. The first (pl. II, *a*) is the open-front dwelling, usually, though not always, single-chambered—in most cases a natural cave enlarged and shaped by excavation.

The second type (pl. II, *b*) is wholly artificial, with closed front of the natural rock in situ. Cliff-dwellings of this type are usually multiple chambered, with floors below the level of the threshold; they have generally a crude fireplace beside the doorway, but are seldom provided with a smoke vent. The rooms are commonly rectangular and well shaped, with floors plastered always, and walls usually so to a height of three or four feet. The front walls are from one to two feet thick. In some cases a little masonry has been used in the form of casing about the doorways. In a number of instances porches

were built over the doorways, but nowhere were complete houses built against the cliff, as at Tshirege.

For the most part the dwellings are found in clusters and at two general levels, that is, at the top of the long steep slope of the talus, and again in the face of a second terrace far above the talus and exceedingly difficult of access.

From about half a mile to a mile above the main pueblo of Otowi is a cliff-village that is unique. Here is a cluster of conical formations of white tufa, some of which attain a height of thirty feet (pl. VI). These are popularly called "tent rocks." They are full of caves, both natural and artificial, some of which have been utilized as human habitations. These dwellings are structurally identical with those found in the cliffs. They present the appearance of enormous beehives.

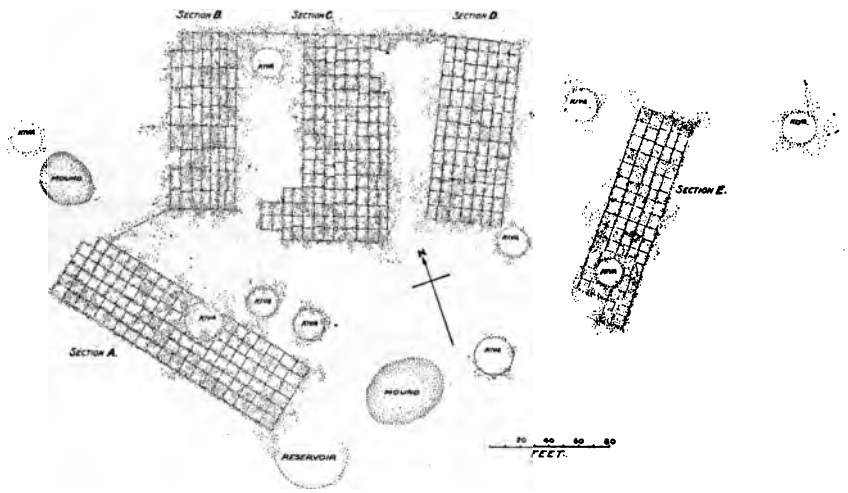


FIG. 6.—Ground plan of Otowi.

The main pueblo ruin at Otowi differs in plan from any other in this region (fig. 6). It consists of a cluster of five houses, situated on sloping ground and connected at one end by a wall, with the exception of the house marked *e* on the plan, which was detached. These were terraced structures, probably almost an exact counterpart of the present terraced houses at Taos, though perhaps somewhat smaller and containing a less number of stories. No one of the houses at Otowi had more than four stories and none fewer than two. The ground plan here shown is only approximately correct. A drawing showing the exact alignment of walls can not be made until many tons of stone are removed. Accordingly some conjectural work was necessary in making the plan. Altogether the five houses contained about 450 rooms on the ground floor. The number of superimposed

rooms is largely a matter of conjecture; the writer estimates this at 250, making a total of about 700 rooms.

There were ten circular kivas at Otowi, all subterranean and outside of the walls of the buildings with two exceptions (see plan, fig. 6, sec. *a*, *e*). Kivas within the pueblo walls were unusual in the pueblos of Pajarito plateau. They exist in the great ruin at the base of Pedernal peak and are found also in the older and smaller houses.

A reservoir, which doubtless supplied water for drinking purposes at times, was placed, as was often the case in both ancient and modern pueblos, so as to receive the drainage from the village.

The traditions of Otowi are fairly well preserved. It was the oldest village of Powhoge clans of which they have definite traditions at San Ildefonso. They hold in an indefinite way that prior to the building of this village they occupied scattered "small house" ruins on the adjacent mesas, and they claim that when the mesa life grew unbearable from lack of water, and removal to the valley became a necessity, a detachment from Otowi founded the pueblo of Perage in the valley on the west side of the Rio Grande about a mile west of their present village site.

No. 9.—This is a small pueblo ruin in Otowi canyon just across the arroyo about 300 yards south of Otowi pueblo. It is situated on top of a narrow ridge which runs parallel with the one on which the large ruin stands. The stones of the building are smaller and the construction work is cruder. The building consists of one solid rectangle with one kiva within the court. Seven other small pueblo ruins or clan houses are scattered along the same ridge to the west within a distance of one mile, all apparently belonging to this settlement.

No. 10. Tsankawi (Tewa, "place of the round cactus").—About two miles southeast of Otowi is the ruin of Tsankawi, the most picturesquely situated of any settlement of primitive people ever seen by the writer, with the exception of Chipiinuinge at the base of Pedernal peak. It is a veritable "sky city." From the top of Tsankawi mesa one looks upon a stupendous panorama—the Jemez range on the west; on the eastern horizon, a hundred miles of the lofty Santa Fé range; glimpses of the Rio Grande and its fertile valley through a cleft some five miles away, beyond which lies a dreary sand-waste; and near at hand in every direction huge yellow volcanic mesas and profound depths of wooded canyons. The site was chosen entirely for its defensive character and is an exceptionally strong one.

The builders of Tsankawi kept to the orthodox rectangular plan, as shown in figure 7. The masonry is in no respect different from that of Otowi. There were ten kivas at Tsankawi—a large number for the population, which probably never exceeded 300 to 400 people, although this would be considerably increased if we should count the population

of the cliff-village in the south face of the mesa. Tsankawi was a composite pueblo, consisting of four virtually independent houses. The ground plan of this pueblo embraces about 200 rooms. The sections were each probably three stories high. Plate VII, *a*, illustrates the entire development of this village.

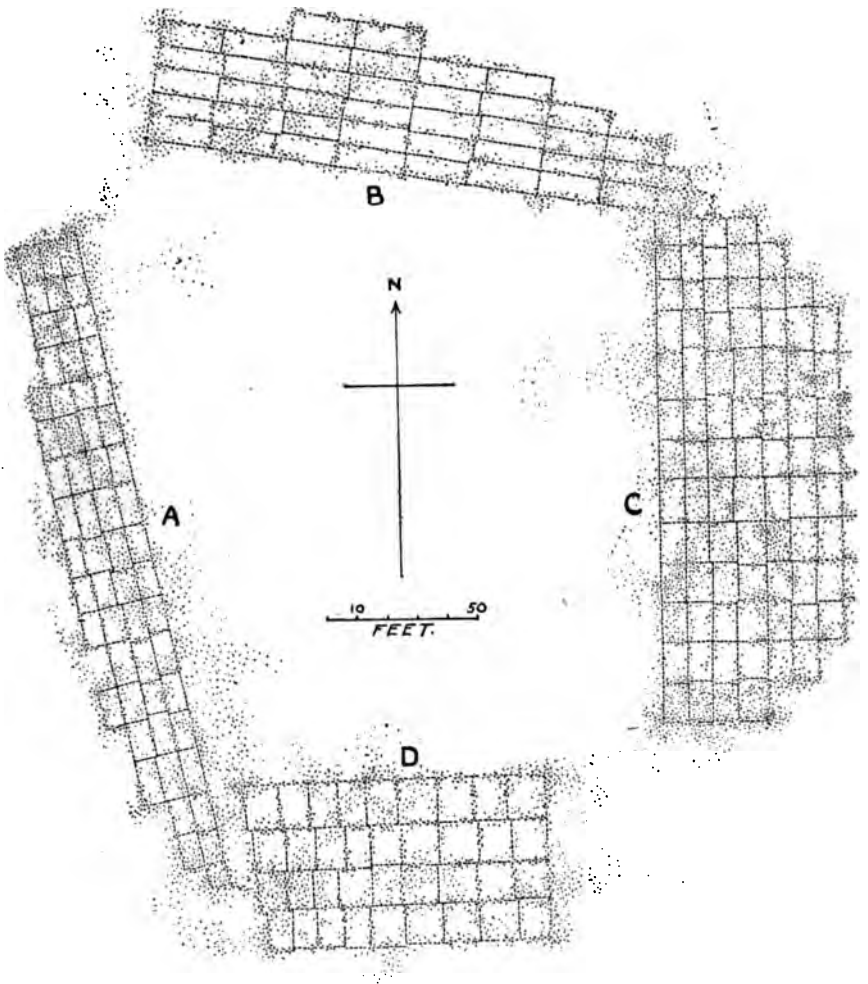


FIG. 7.—Ground plan of Tsankawi.

No. 11.—This ruin is situated in Canyon de los Alamos on a high ridge running parallel with the stream on its south side. It is about three-quarters of a mile west of Tsankawi and its inhabitants eventually merged with the population of that village. The settlement consisted of one rectangular pueblo of considerable size and a number of small clan houses scattered along the ridge to the west for about half a mile. It belongs to the older class of ruins.

No. 12.—This is a small pueblo ruin of the older type, situated on a lower bench just north of Tsankawi mesa, about half a mile south of the Alamo. The walls are entirely reduced. This site belongs to the same class and epoch as no. 9 and 11.

No. 13. Sandia.—This village is situated on a high mesa between the Sandia and Bear canyons and is one of the most commanding sites in Pajarito park. The pueblo was small, compactly built, forming a complete rectangle (fig. 8). It was probably two stories high. The regularity of the structure was broken by the building of a number of one-story rooms against the east and north sides. There is one kiva inside the court. In the face of the mesa to the south is a cliff-village which includes some of the finest specimens of this type of cliff-dwelling within the writer's personal knowledge. They are unusually well preserved. Many have the plastered door-casings intact. Some doorways have wooden casings still in place. The rooms are well constructed and conveniently arranged, and, in connection with anterior, open rooms, the evidences of which are plain, must have formed commodious and comfortable homes.

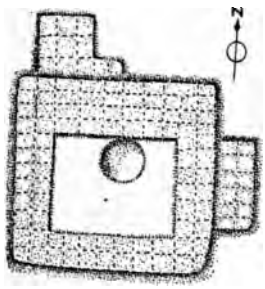


FIG. 8.—Ground plan of Sandia.

No. 14. Navawi ("place of the hunting trap").—Beginning about a mile and a half south of Tsankawi, the aspect of the country changes. From the Pajarito canyon to Rito de los Frijoles, a distance of perhaps ten miles, the high abrupt narrow tongue-like mesas protruding toward the river with broad timbered valleys between are replaced by one great table-land, the Mesa del Pajarito, which at first sight appears to be one continuous expanse only partially covered with piñon, cedar, and juniper. It is, however, deeply cut at frequent intervals by narrow and absolutely impassable canyons. Toward the northern limit of this level expanse, about two and a half miles southeast of Tsankawi, is situated the ruin of Navawi. It belongs to the same class and epoch as Otowi, Tsankawi, and Tshirege. It consists of two large buildings about 200 yards apart (fig. 9), several clan houses on the level mesa near by, and a cliff-village of considerable extent in the face of the low mesa to the south and west. On the narrow neck of mesa about 300 yards west of the pueblo, at the convergence of four trails, is a game-trap (nava) from which the village takes its name. This is one of a number of pitfalls that have been discovered at points in this region where game trails converged. One of the best of these is that at Navawi. It was so placed that game driven down the mesa from toward the mountains or up the trail from either of two side

canyons could hardly fail to be entrapped. The trap is an excavation in the rock which could have been made only with great difficulty, as the cap of tufa is here quite hard. The pit is bottle-shaped, except that the mouth is oblong. It is 15 feet deep and about 8 feet in diameter at the bottom. The mouth of the pit is about six feet in length by four in breadth. This trap has been used in modern times by the San Ildefonso Indians.

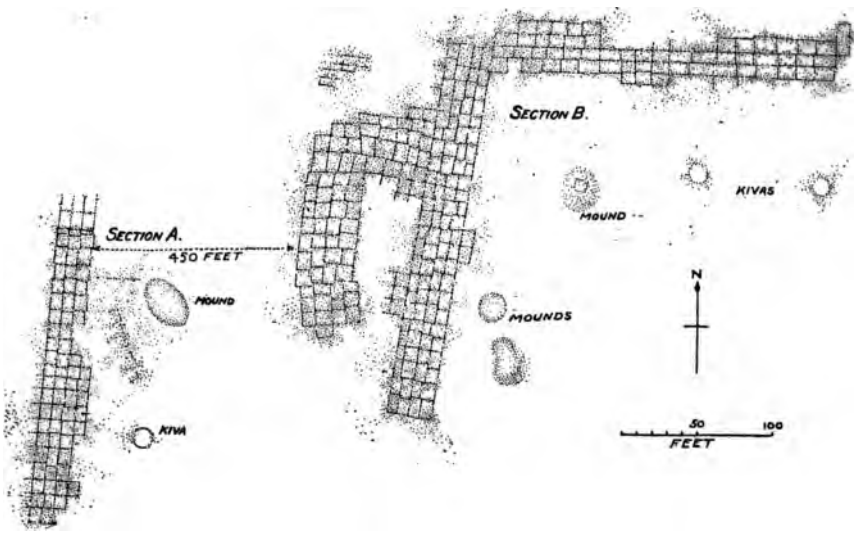


FIG. 9.—Ground plan of Navawi.

No. 15. Tshirege (Tewa, "a bird;" Spanish, pajarito, "small bird").—This great ruin is situated on a low bluff on the north side of the Pajarito about six miles west of the Rio Grande. It is on the northern edge of the great Mesa del Pajarito, described in connection with Navawi. The possibilities for agriculture in this vicinity were considerable during the time when the country was adequately watered.

Tshirege was the largest pueblo in the Pajarito district, and with the extensive cliff-village clustered about it, the largest aboriginal settlement, ancient or modern, in the Pueblo region of which the writer has personal knowledge, with the exception of Zuñi. The ruin shows a ground-plan of upward of 600 rooms (fig. 10). Mr K. M. Chapman has prepared in water color a restoration of the pueblo with a small portion of the tributary cliff-village; a photograph of this is shown in plate III, *a*. This is believed to be quite true to history. Plate VII, *b* is a map of the entire mesa top on which this ruin is situated and illustrates the development of a typical pueblo of the pre-

historic period. There are ten kivas in and about Tshirege (one not shown in plan), all of the circular subterranean type (see fig. 11). A

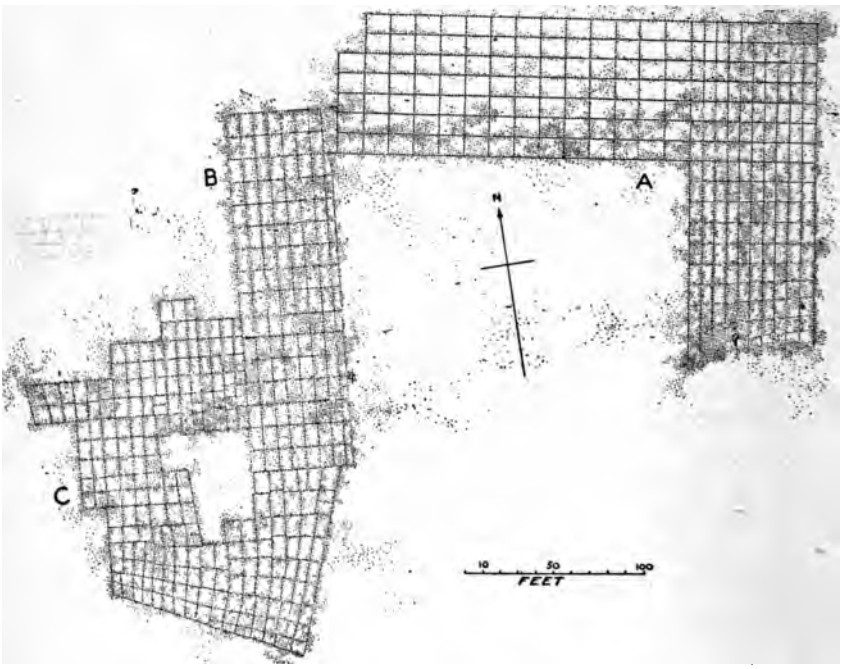


FIG. 10.—Ground plan of Tshirege.

defensive wall extended from the southwest corner of the main building to the rim of the cliff 150 feet away. On the face of the cliff



FIG. 11.—Ruins of kiva, or council chamber, Tshirege (from a painting by Chapman).

below is one of the best petroglyphs to be found in the Southwest. It is a representation of the "plumed serpent" about seven feet in

length, etched on the rock by pecking with a stone implement. The principal cemetery of the village was located in the southwest corner of the court and many of the excavated rooms in the cliff walls served as burial vaults.

The cliff-village along the side of the mesa, shown by restoration in plate III, *a*, was the most extensive group of pueblo-like cliff-dwellings of the kind of which the author has any knowledge. The cluster extends along the cliff for three-quarters of a mile and represents accessions from many small pueblos. Tshirege is said to have been the last of all the villages of Pajarito park to be abandoned. A limited supply of water can still be obtained at almost any season at the spring in the arroyo a quarter of a mile away, and during wet seasons the Pajarito carries a little water past this point. The remains of a small reservoir (pl. III, *a*) are to be seen on the mesa top a few yards north of the main ruin.

No. 16.—This is a small ruin consisting of a single quadrangle situated about three miles west of Tshirege, just south of the abandoned Buckman sawmill road. It belongs to the older class of ruins and presents no features of especial interest. A short distance to the west is a game pit, similar to the one at Navawi.

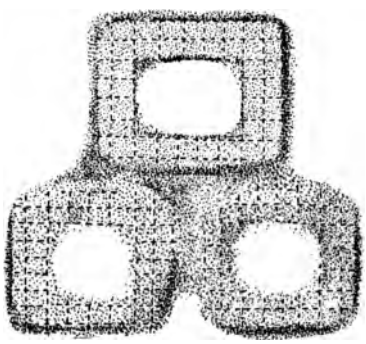


FIG. 12.—Ground plan of ruin no. 17.

No. 17.—In the midst of a beautiful open park, about three miles southeast of the abandoned sawmill, is an important ruin (fig. 12) consisting of three compact connected rectangles. No walls are visible above the débris, but on clearing away the loose stone, well-preserved plastered walls eight feet in height are disclosed. Numerous small clan houses are scattered about near by. A few yards to the east is the hollow of a large kiva in which a fine pine tree is growing (pl. VIII, *b*). Not far from this ruin are the remains of a large circular inclosure built of blocks of tufa set on edge, doubtless an ancient shrine. (Pl. XI, *c*.)

No. 18.—Less than a mile west of no. 17 on a high point at the confluence of two very deep gorges is the best-preserved ruin in this region (pl. IX, *a*). The walls stand in places eight feet above the débris. Great pine trees are growing within the rooms. There is every evidence that these mesas have been forested since the abandonment of the pueblos (pl. VIII, *a*, *b*; pl. IX, *a*). This ruin is almost inaccessible, except from the west. It is not less than 800 feet above the waters of the Rito del Bravo, which it overlooks. The ground plan (fig. 13) is very irregular.

No. 19 (fig. 14).—A small pueblo ruin in the beautiful wooded park just south of the Rito del Bravo and a mile north of Rito de los Frijoles. It presents no features of particular interest. Near by are

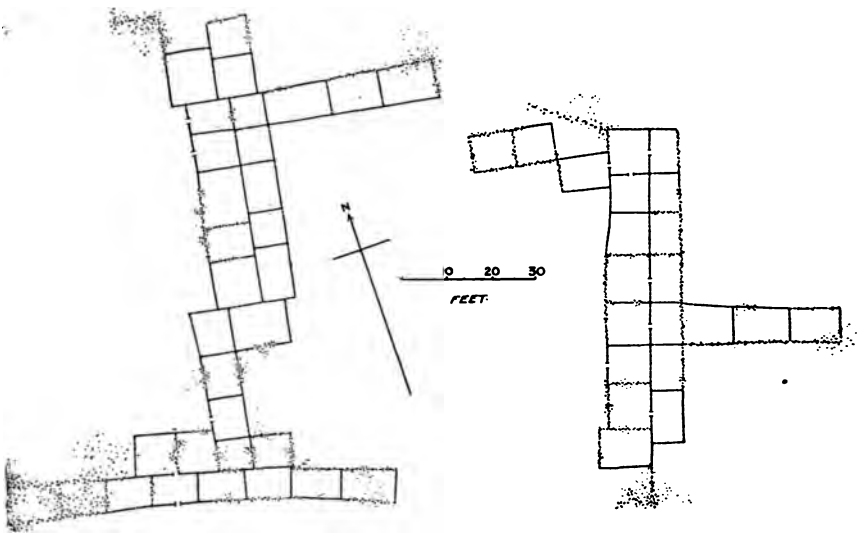


FIG. 13.—Ground plan of ruin no. 18.

many small clan houses. One may ride for some miles along this mesa and never be out of sight of ruins of this class.

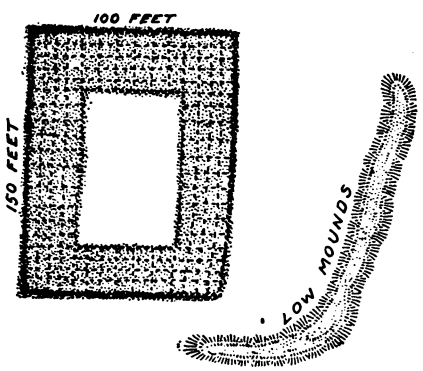


FIG. 14.—Ground plan of ruin no. 19.

No. 20 (fig. 15).—This is about the largest ruin between Tshirege and the Rito de los Frijoles, with the exception of no. 17. It consists of one compact rectangle. The débris of fallen walls is perhaps eight feet high. A large inclosure walled with stone surrounds the southern and eastern sides of the pueblo. This site overlooks the deep gorge of the Bravo to the north, and south a few rods is another deep canyon. The site is approached by an ancient trail from the west.

No. 21. Tyuonyi.—When we descend the southern rim of Mesa del Pajarito into the Rito de los Frijoles, we enter upon what is claimed to be ancient Keres ground, though its identity as such can not be said to be established. From here south to Cañada de Cochiti the country again assumes the character of that between the Santa Clara and

Pajarito canyons. Here the potreros reach stupendous heights and the canyons correspondingly great depths. A thorough knowledge of Indian trails is all that will enable one to penetrate this labyrinth. For description of the remarkable antiquities from Rito de los Frijoles to Cañada de Cochiti the writer can do no better than to quote Mr A. F. Bandelier, the pioneer archeologist of this region. The photographs here reproduced were made on the present author's third field trip to this section in the summer of 1905. Mr Bandelier says:[a]

"From the southern edge of the Ziro-Ka-uash, or Mesa del Pajarito, we look down into the Rito as into a narrow valley several miles long and closed in the west by rocky ledges, over which the stream descends to the bottom lands of the Rito. Through these it flows for several miles as a gushing brook, enlivened by trout, bordered by thickets of various kinds of shrubbery, and shaded at intervals by groves of pine, and tall, isolated trees of stately appearance. In the east, not far from the Rio Grande, a narrow, frowning gateway is formed by lofty rocks of black basalt, leaving space for the bed of the stream, the waters of which reach the river only during freshets, while in the valley they are permanent. The slope of the mesa lining the Rito on the south is gradual, though steep; ledges and crags of pumice protrude from the shrubs and grass growing over it. Tall pines crown it above. The average depth of the Rito below both mesas is several hundred feet; in places, perhaps as much as 500 or more. It is not properly a valley, since its greatest width hardly attains half a mile, but a gorge or 'cañon' with a fertile bottom and a brook running through it. . . .

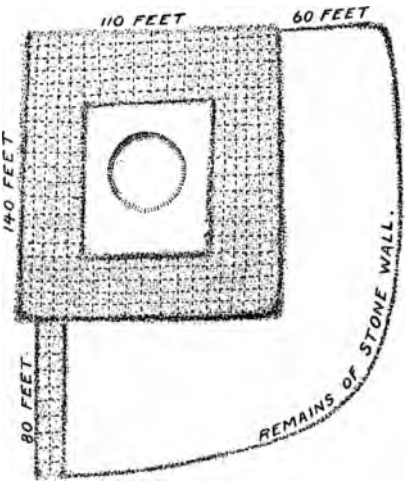


FIG. 15.—Ground plan of ruin no. 20.

"As seen from the brink of the southern mesa, the view of the Rito is as surprising as it is picturesque.

"The effect is heightened by the appearance of a great number of little doorways along the foot of the cliffs, irregularly alternating with larger cavities indicating caves, the fronts of which have partially or completely crumbled away. The base of the cliffs rises and

[a] Papers of the Archæological Institute of America, American series, IV, Final Report, part II, p. 139, Cambridge, Mass., 1892.

falls, so that the line of caves appears to be at different elevations and not continuous. There are spaces where the rock has not been burrowed into; in some places two, in others three tiers of caves are visible. The whole length of this village of troglodytes is about 2 miles, rather more than less. . . .

"The cave dwellings of the Rito are so much like those of the Pu-yé and Shu-finné that they scarcely need description; the differences are purely local and accidental. As in the Tehua country, they have artificial floors, and are whitewashed inside or daubed over with yellow clay. There are the same types of doorways, air-holes, and possibly loopholes; the same kind of niches and recesses; but the cave dwellings at the Rito are the most perfect seen by me anywhere. . . .

"I measured nearly every cave through the whole length of the cañon as far as traces of former habitations extended, but must confine myself to some details only. Against such of the cliffs as rise vertically and the surface of which is almost smooth, terraced houses were built, using the rock for a rear wall. Not only are the holes visible in which the ends of the beams rested that supported roofs and ceilings, but in one or two places portions of the beams still protrude. They were round, and of the usual size. Along the base of these cliffs extends an apron, which was once approximately leveled, and on this apron the foundations of walls appear in places. It would seem that a row of houses, one, two, and even three stories high, leaned against the cliff; and sometimes the upper story consisted of a cave, the lower of a building.

"Chambers nearly circular, larger in size than the majority of caves, are also found in the cliffs, some of which have a low projection around the room like a bench of stone. These were doubtless estufas, as I was told by one of the Indians who accompanied me to the spot. There is a distinct estufa not far from the bank of the brook opposite those caves situated in the upper portion of the valley, and a smaller one still higher up. Including the four estufas connected with the pueblo ruins, of which I will speak further on, I have noticed at least ten such constructions at the Rito.

"In describing the Pu-yé, I spoke of the pueblo ruins which lie on the top of the cliff of that name. At the Rito de los Frijoles there are at least three similar ruins, but they lie in the river bottom. Two of them are in front of the caves at a short distance from the talus sloping up to them. One was a one-house pueblo of the polygonal type, which probably sheltered several hundred people; the interior court still shows three circular depressions or estufas. The other, which lies about 60 meters (196 feet) east of it, shows 39 cells on the ground floor; and 16 meters (23 feet) north of it is an estufa 12 meters in diameter. . . .

"A third ruin, situated nearly a mile farther down the gorge in a grove of pine trees, formed an L, with a rude stone inclosure on its north side, and connected with it is a small estufa. It is quite as much decayed as the large polygon, and the potsherds covering its surface are similar." . . .

No. 22. Pueblo of the Yapashi and the Stone Lions.[a]—"It requires several hours of steady walking to reach the upper end of the Potrero de las Vacas. . . . To the right of the trail yawns the deep chasm of the Cañada Honda, from which every word spoken on the brink re-echoes with wonderful distinctness. Toward the eastern end of the Potrero the forests begin to thin out and an open space extends until within half a mile of the rocky pedestal of the San Miguel Mountains. On this open space stands the ruined pueblo shown on Plate I, figure 11." [In this bulletin pl. IX, *b*.]

"Like all other pueblos of this region it is built of blocks of pumice or tufa, nearly rectangular, but now much worn. I counted 280 cells on the ground floor and the average size of 126 of them proved to be 4.3 by 2.7 meters (14 by 9 feet). Six estufas are visible; four inside the courtyard formed by the houses and two outside. The courtyard is open to the southeast and the whole forms practically a one-house pueblo, the buildings of which were at least two stories in height and in some places three and perhaps four. To the southeast of the ruin on the edge of the woods stand the remains of an artificial tank. The population of this village can not have fallen short of five hundred souls." . . .

"The name of Pueblo of the Yap-a-shi has been applied to the ruin, but its proper name is still unknown to me, as the designation current among the people of Cochiti, Tityi Ha-nat Ka-ma Tze-shum-a, signifying literally 'the old houses above in the north,' with the addition of Mo-katsh Zaitsh, or 'where the panthers lie extended,' is subsequent to the abandonment of the village. This name refers to the lifesize images of pumas or American panthers (also called mountain lions), which lie a few hundred yards west of the ruin in low woods near the foot of the cliffs called 'Potrero de la Cuesta Colorado.'" [See pl. X, *a* of this bulletin.] . . .

"These remarkable stone objects are cut out of the tufa which constitutes the surface rock of the Potrero de las Vacas." . . .

"The figures attached to the rock are two in number, and lie side by side, representing the animals as crouching with tails extended, and their heads pointing to the east. They are much disfigured, especially the heads.[b] Still the natural agencies to which the images have been exposed in the open air have rounded the edges of the (originally very

[a] Final Report, part II, p. 150.

[b] The act of vandalism was perpetrated by shepherds.

uncouth) carvings and increased their life-like appearance. I recognized at a glance when I first saw them in the evening twilight of the 25th of October, 1880, the intention to represent panthers preparing for a spring. The length of each statue is 1.80 m. (6 feet), of which 0.74 and 0.71 m., respectively (or a little over one-third), make the extended tails; the height is nearly 0.60 m. (2 feet), and the breadth varies between 0.35 m. across the shoulders and 0.43 m. across the hips (14 and 17 inches). The space between the heads and the tails of both figures measures 0.20 m. (8 inches) and 0.53 m. (22 inches).

"An irregular pentagonal enclosure surrounds the images, made of large blocks, flags, and slabs of volcanic rock, some of which are set in the ground like posts, while the majority are piled on each other, so as to connect the upright pillars. The perimeter of this enclosure is 20.8 m. (68 feet); the height of the tallest post, 1.25 m. (4 feet); and the length of the longest slab, 1.58 m. (5 feet 2 inches). On the southeastern corner is an opening one meter (39 inches) wide, forming the entrance to a passage lined by two stone hedges like the enclosure, running out to the southeast to a distance of 5.85 meters (19 feet). The whole is much disturbed, and its original appearance was certainly more regular than at present. When I last saw the monument, it looked like a diminutive and dilapidated Stonehenge." . . .

No. 23. La Cueva Pintada ("the painted cave"), plate x, *b*.—"In the gorges both north and south of the Potrero are quite a number of artificial caves. Those on the north, in the Cañada Honda and the upper part of the Cañon del Alamo, are fairly preserved. The upper part of that gorge is wooded, and the caves were thus somewhat sheltered. They offer nothing worthy of special mention, and do not compare in numbers with the settlement at the Rito. The Queres say that these caves also are 'probably' the work of their ancestors. Those on the south side of the Potrero de las Vacas are much more worn, and are connected with the interesting natural rock shelter called by the Queres Tzek-iat-a-tanyi, and now usually termed Cueva Pintada or the painted cave. This large cavity measures 17 meters (55 feet) across its entrance, its depth is 14 meters (46 feet), and at an elevation of 17 meters (55 feet) above the floor is a hemicycle of pictographs painted in red ochre, to which there is an ascent by means of old and much-worn steps in the rock. The pictographs represent some of the well-known symbols of the pueblos, such as clouds, sheet lightning, the sun, dancing-shields, and male and female dancers. Their execution is very rude. The diameter of this hemicycle is 10 meters (32½ feet). Besides these aboriginal daubs, there are modern ones of equal artistic merit, among which the cross is prominent. Cave dwellings have been excavated in the rear wall of the cave, and 15 meters (48 feet) above the floor are indentations

showing that chambers had also been burrowed out at this height. The steps therefore may have been made in order to reach this upper tier of rooms; for it appeared to me that the paintings were more recent than the cave village, as they are partially painted over walls of former artificial cells, the coating of which had fallen off before the pictographs were placed on them.[a] Most of the cave dwellings are found on the west side of the Cueva Pintada. Some of them have two tiers; and there are also traces of foundations in front of the cliff, showing that houses had been built against the wall. Of the extent of this cave village it is difficult to judge, but enough is left to indicate that it may have contained a few hundred people."

No. 24. Haätse.—"Near the foot of the Sierra San Miguel lie the ruins of the pueblo shown on plate I, figure 13. It stands on a bald eminence, from which, as from the Potrero de las Vacas, an extensive view is obtained in all directions except the west and north. The village consisted of five separate buildings disposed around an open square and its population must have been at least two hundred souls. I saw two estufas outside of the square, one of which measured seven, the other thirteen meters in diameter (23 and 42 feet). Fifty meters southeast of the ruin lie the remains of a large artificial tank. The pottery is mostly coarsely glazed, older kinds being rare. This pueblo the Queres of Cochiti call Ha-a-tze (earth), which seems to be its original name." . . .

No. 25. Stone Lions of Potrero de los Idolos.—"On the open space are the remains of two images of panthers, similar to those on the Potrero de las Vacas. One of them is completely destroyed by treasure hunters, who loosened both from the rock by a blast of powder, and then heaved the ponderous rocks out by means of crowbars. After breaking one of the figures to pieces, they satisfied themselves that nothing was buried underneath.

"The other image, although somewhat mutilated, is still in a better condition than the images on the Potrero de las Vacas, as the rock out of which it is carved is much harder and has consequently resisted atmospheric erosion far better. Its size is very nearly that of the two figures formerly described.

"The imperfections of the sculpture are very apparent; were it not for the statements of the Indians, who positively assert that the intention of the makers was to represent a puma, it would be considered to be a gigantic lizard. Still, there can be no doubt that it is Mo-katsh, the panther fetich of the Shya-yak (or hunters) of some Queres tribe. There are also the remains of a stone enclosure similar to that on the Potrero de las Vacas; and a stone post still erect measures 1.32 m.

[a] I was informed that in former times, whenever a pueblo was abandoned, it was customary to paint a series of such symbols in some secluded spot near the site of the village. Whether this is true or not I do not know.

in height (4 feet 4 inches). A slab lying on the ground near by, and with one end broken off, is 1.58 m. (5 feet 3 inches) long. Both stones show marks of having been rudely dressed with stone implements, but there are no traces of ornamental carvings. A number of smaller slabs and blocks also lie scattered about.

"There is no pueblo ruin, at least to my knowledge, in the immediate vicinity of the Potrero de los Idolos, and I was repeatedly told that the Potrero Largo had no traces of antiquities on its summit. But the ancient Queres pueblo of Kua-pa lies a little over one mile to the southwest, in the valley or cañada, and my Indian informants asserted that the inhabitants of Kua-pa had made the sculptures." . . .

No. 26. Kuapa.—"The ruins of Kua-pa lie about a mile and a half lower down the valley than the present Mexican settlement, midway between the Potrero Viejo and the Potrero de los Idolos. They occupy a low bluff between the stream on the north and a dry gulch on the south, and are very much decayed, many of the mounds being barely distinguishable. I am positive of the existence of five circular estufas, but there may be at least two more. . . .

"The ruins of Kua-pa look much more ancient than any of those on the potreros; but this is due to the material of which they were built. In place of blocks of tufa, loose rubble and adobe formed the bulk of its walls. Adobe disintegrates rapidly, and rubble forms heaps of disorderly rubbish." . . .

No. 27. Kotyiti.—"The Potrero Viejo is a natural fortress, almost as difficult to storm as the well known cliff of Acoma. In case of necessity, a small tribe could dwell on its top for years without ever being obliged to descend into the valley beneath; for it is wooded and has a limited area of tillable soil, and natural tanks. Only from the rear or southwest is the ascent over a gradual slope; from the front and the north the trails climb over rocks and rocky débris in full view of the parapets, natural and artificial, that line the brink of the mesa.

"Two classes of ruins occupy the summit, one of which is the comparatively recent pueblo. It is two stories high in some places, very well preserved, and built of fairly regular parallelopipeds of tufa. The woodwork in it was eventually destroyed by fire, and much charred corn is found in the ruins. The average size of 118 rooms on the ground floor, which are all in the pueblo with the exception of about ten, is 5.0 by 2.8 m. (16 feet 5 inches by 9 feet 2 inches). This is a large area in comparison with the size of older ruins. I noticed but one estufa, and the pottery bears a recent character.

"There are also traces of older ruins, which mark the existence of small houses. . . .

"The oldest ruins on the mesa, which hardly attract any attention, are those of a prehistoric Queres pueblo; the strikingly well preserved ones are those of a village built after the year 1683, and abandoned in April, 1694."

II. Ruins of the Chama Drainage

The Rio Chama enters the Rio Grande near the Mexican village of Chamita, about a mile west of the Indian village of San Juan. It forms the main watershed for all that portion of northern New Mexico which lies between the Rio Grande and the continental divide. In this bulletin it is necessary to deal with only the lowest 100 miles of its course—that is, the portion which traverses the Jemez plateau. Strictly speaking, the Rio Chama has no valley on the south side. From its mouth to above Abiquiu it is closely bordered on the south by the great rim of the volcanic plateau which rises abruptly to a height of from 200 to 1,000 feet, while on the north there is an open arid valley broken up by small isolated mesas in the form of truncated cones. Above Abiquiu the river flows for many miles through a picturesque gorge. The country on both sides is rough and broken, that above the mouth of the Gallinas being in the nature of "bad lands". (Pl. xi, *a*, *b*.)

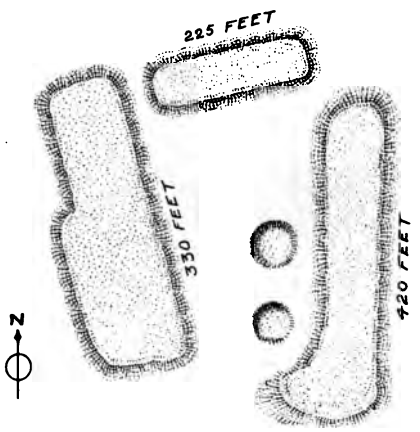


Fig. 16.—Ground plan of Poihuuinge.

The entire area is rich in archeological remains. Above Abiquiu are both cliff-dwelling and pueblo ruins, stone being the only building material used. From Abiquiu down, pueblos only are found. These were quite numerous, in most cases of great extent and all built of adobe with rubble used in the foundations. With the exception of those at Abiquiu and Chamita, all these are prehistoric. In describing the antiquities of this watershed, it will be convenient to consider first, the plateau ruins on the south side of the Chama between the Rio Grande and Pedernal peak; second, the valley ruins north of the river up to Abiquiu; third, the ruins above Abiquiu.

A succession of large pueblos occupied commanding sites on the northern rim of the plateau overlooking the Chama. These will be described in the order of their occurrence ascending the river.

No. 28. Poihuuinge (fig. 16).—About four miles above the confluence of the Chama with the Rio Grande is the noble cottonwood grove whose grateful shade has been the noon or evening goal of every traveler that has toiled up or down that sandy valley for a century. At this point a chain of detached fragments of the great Black mesa (Mesa Canoa) crosses over to the south side of the river and extends for some miles southwestward. On the top of one of these black

fragmentary mesas about a mile south of the river stood the village of Poihuuinge. Its ruins are probably 500 feet above the level of the river. The pueblo was of adobe, with large irregular blocks of basalt in the foundation. It consisted of three buildings so placed as to form an irregular quadrangle, the south side being open. The extreme length of the longest side is 421 feet. There are two circular, subterranean kivas within the court. About 100 yards south of the pueblo is the ruin of a large circular kiva, 50 feet in diameter, which was in part subterranean and in part constructed of irregular blocks of basalt, conglomerate, and sandstone carried above ground to a height of probably eight or ten feet. About 200 yards east are the ruins of a building similarly constructed, which bears some evidence of having been used for a shrine. In this structure large blocks or slabs of stone set on edge were used in the walls and the general form is that of shrines still in use among the Tewa. It is 35 feet in diameter, considerably larger than any of the shrines now in use. The pottery of this ruin is strikingly similar to that found in the ruins farther south. While there is every evidence of the use of corn at this pueblo, there has been no possibility of agriculture in the immediate vicinity. The nearest land that might have been arable is about a mile away.

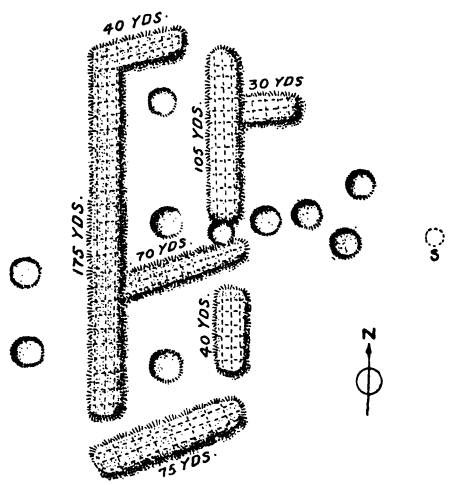


FIG. 17.—Ground plan of Teëuinge.

No. 29. Teëuinge (fig. 17).—This is a large ruin situated on the rim of the mesa overlooking the valley, just below the confluence of the Rio Oso with the Chama. It is about a quarter of a mile south of the river, and the bluff on which it stands is about 200 feet high. The pueblo was constructed of adobe with some use of lava blocks in the foundation walls, and is now reduced to low mounds. It was built in two large adjoining quadrangles, or would perhaps be better described as one long rectangle divided by cross walls into two courts. The extreme length of the rectangle is 525 feet, the extreme width 210 feet. The walls have a perimeter of 1,470 feet. Within and contiguous to the pueblo are ten circular, subterranean kivas and a few yards to the east is a ruined shrine in circular form, eight feet in diameter, built of lava blocks set on edge.

No. 30. Kwengyauinge ("blue turquoise house"), figure 18.—This is a large pueblo ruin on a conical hill about 150 feet high overlooking

the Chama river at a point known as "La Puenta," about 3 miles below Abiquiu. It was visited by Yarrow in 1874 and briefly described by him.[a] Some valuable observations are made in his report, though the present writer finds it impossible to agree with some of the most important of them. It should be remembered that the latter's studies at the site occurred thirty-one years later when the ruin was in a much more advanced stage of decay, and the probabilities of inaccuracy were consequently much greater than in Doctor Yarrow's time. However, this could not possibly account for the great difference in dimensions that will be noted on comparing the two plans of the ruins. The site was visited and described[b] by Bandelier also in 1880. This pueblo covered a larger area than any other in the immediate vicinity of the Chama, with the exception of site no. 32. In the opinion of the author it was an adobe structure with about the same amount of rubble in the foundations that the modern Tewa use in the construction of their houses. Yarrow and Bandelier represent this pueblo as exceeding a single story in height; Yarrow suggests two, Bandelier two to three stories. The amount of débris does not seem to justify these conclusions with which the writer of this paper can not agree. The mound is very low and the pueblo was not built of material that would be carried away by subsequent settlers, as was often done where stone was used. Moreover, the method of using adobe was the primitive one of increasing the height of wall by the addition of successive layers of mud held in place by a box-like support of wattle work, two upright parallel surfaces set and fastened just far enough apart to give the required thickness of wall. Adobe work of this kind was not sufficiently stable for walls more than one story high unless made of greater thickness than in the case of any of the adobe pueblos of this region. In addition to the small amount of débris the great length of the various sections of this village would indicate that the builders had not mastered their material to a sufficient extent to enable them to erect a many-storied building, as they could do with stone, or even with adobe after learning the art of making the latter into bricks. An interesting constructive feature

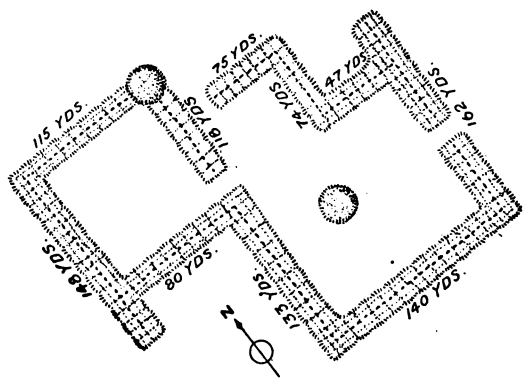


FIG. 18.—Ground plan of Kwengyauinge.

[a] Annual Report of the Chief of Engineers for 1875, p. 1064.

[b] Papers of Archæological Institute of America, American series, part II, p. 56, Cambridge, Mass., 1884.

of this pueblo is the one heavy interior wall, forming a central axis extending through the entire length of the structure, all parallel walls, including the exterior, and all cross walls being much lighter and in every way inferior. Whether there was communication between apartments on opposite sides of this wall is as yet problematical. Future excavations may decide that question.

No. 31. Abechiu (Tewa, "the screech of the owl"), figure 19.—This was an adobe pueblo situated on the lower mesa some three hundred feet above the Chama. It is just south of the present Mexican town of Abiquiu. The site is variously known to the Tewa Indians as Abechiu, Josege, and Muké. This may be owing to the fact that there have been several distinct occupations of this village. Its history has been written by Bandelier.[a]

The ruin is now reduced to low mounds which have been dug over considerably in a desultory way.

No. 32.—On the top of the second mesa south of the Chama at Abiquiu are ruins of an exceptional character. This is a crescent-shaped mesa about one-half mile wide by 1½ miles long. The top is level and sparsely covered with short buffalo grass and a few scrubby pines and piñons. Its general trend is from southwest to northeast. Beginning at about the center of the mesa and extending toward the northwest are vestiges of ruins of very great extent. Only sufficient material remains on the ground to indicate the outlines of the buildings. This material consists of cobblestones and small lava blocks, evidently the foundations of very ancient walls. The rooms outlined vary from 8 to 10 feet wide by from 15 to 20 feet long, the average being about 9 by 18. In some places these rooms are plainly outlined by the protruding foundation stones, in others barely distinguishable, and in still other places fading out entirely. They follow the trend of the mesa for over 900 yards. One may count the outlines of rooms to the number of many hundreds. The author ventures the opinion that not fewer than 2,000 are plainly outlined.

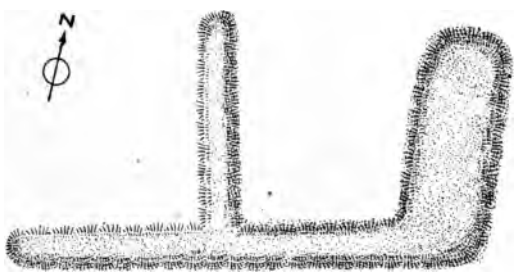


FIG. 19.—Ground plan of Abechiu.

No. 33. Chipiinuinge (Tewa, "house at the pointed peak"), figure 20.—A great ruined pueblo and cliff-village occupying a small detached mesa between the Canyones and Polvadera creek, 4 miles south of Rio Chama and about 14 miles southwest of Abiquiu. The site was

[a] Papers of the Archæological Institute of America, American series, part II, p. 54, Cambridge, Mass., 1884.

doubtless selected on account of its defensible character, the pueblo being situated at least 800 feet above the level of the creek and its walls built flush with the edge of the precipice. The great Pedernal peak, from which the village takes its name, rises on the other side of

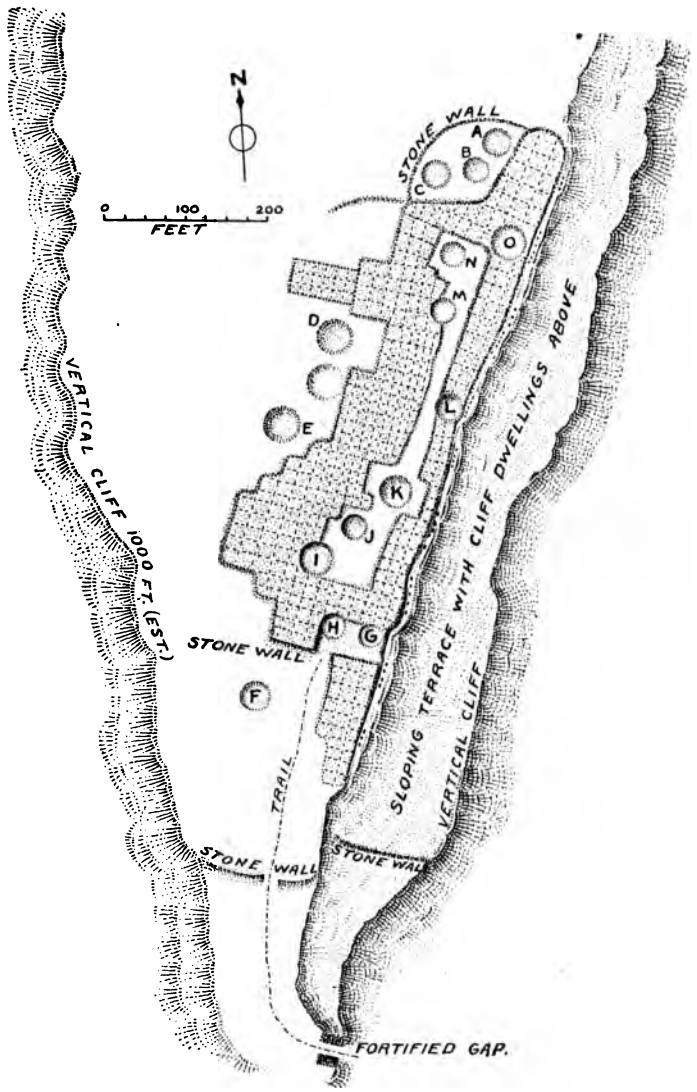


FIG. 20.—Ground plan of Chipiinuinge.

the canyon about 2 miles to the southwest. The pueblo is inaccessible except by a single trail which winds up from the Polvadera and reaches the summit of the mesa at its south end, passing thence through two strongly fortified gaps before the pueblo is reached. The site was impregnable against any form of attack possible in savage warfare.

The commanding position was at the gateway to the Tewa country east of the mountains, and according to tradition it was the function of Chipiinuinge to withstand as far as possible the raids of enemies coming from the northwest. The pueblo was built entirely of stone and was of three stories, in places possibly four. Portions of second-story walls are still standing and many cedar timbers are well preserved. The remains of 15 kivas (fig. 20, *a* to *o*), mostly circular, a few rectangular, are still traceable in and about the ruins. These are all mostly, if not wholly, subterranean, having been excavated in the rock surface on which the pueblo stands. The cliff-dwellings in the east face of the mesa are all of the excavated type and appear to have been used for mortuary quite as much as for domiciliary purposes.

No. 34. Yugeuinge (fig. 21).—Passing now to the ruins in the valley north of the Chama, the first to be noticed is that of Yugeuinge, situ-

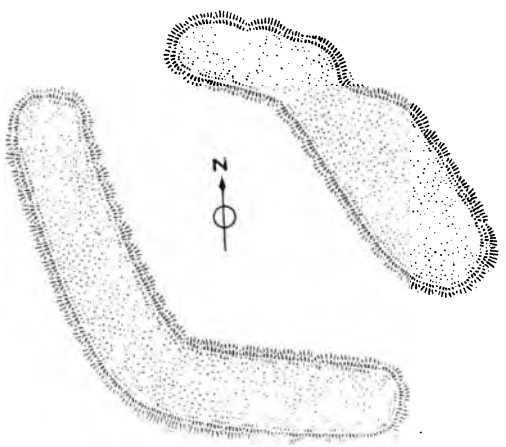


FIG. 21.—Ground plan of Yugeuinge.

ated on the delta formed by the confluence of the Chama and Rio Grande. This site is partially occupied by the Mexican village of Chamita, of especial interest as the first white settlement in New Mexico, founded in 1598. The ruin now consists of one irregular quadrangle with large openings on the northwest and southeast. If the village embraced buildings other than the two great structures surrounding this quadrangle, they have been entirely obliterated. This might readily have occurred, as the site is completely surrounded by cultivated fields. The mounds are so well preserved that the form of the pueblo is perfectly obvious. It was built of adobe with considerable use of rubble and small bowlders laid in mortar.

No. 35. Poseuinge or Posege.—This is the first of a group of large ruins in the valley of Ojo Caliente, the first northern tributary of the Chama. The ruin is about 14 miles above the confluence, situated on

a hill about 140 feet above the Ojo Caliente. It is the largest one of the group in the valley. The walls are built of adobe with some intercalation with slabs of stone. Thirteen circular kivas are to be seen in connection with this pueblo. The plan here shown (fig. 22) is by Mr W. H. Holmes.

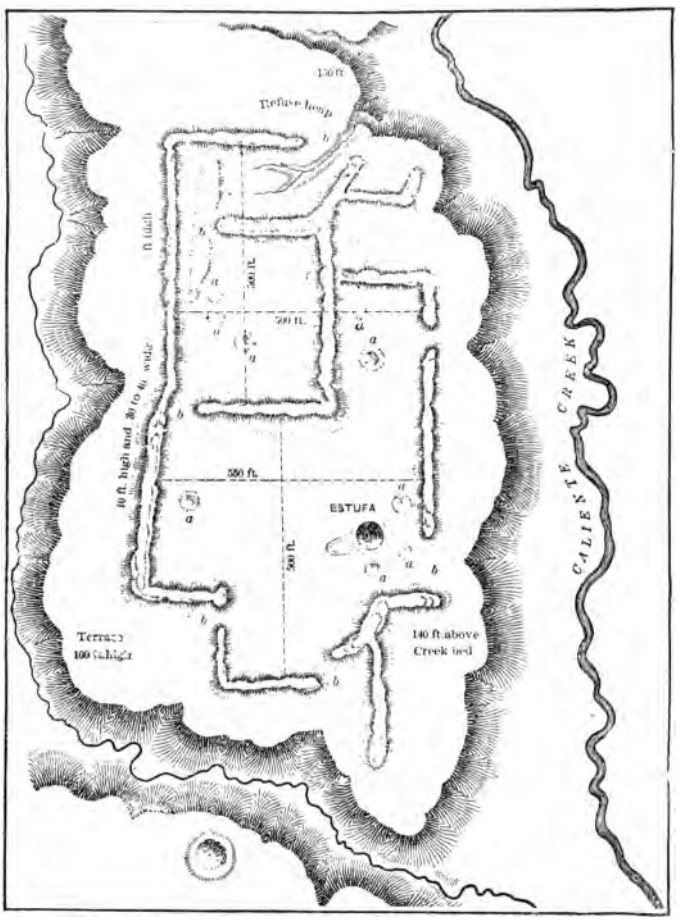


FIG. 22.—Ground plan of Poseuinge or Posege (W. H. Holmes).

No. 36. Homayo (fig. 23).—This is a large, compactly built pueblo ruin situated on a promontory on the west side of the Ojo Caliente about a mile and a half above Posege. The walls are of adobe about a foot thick. There are seven kivas in or about the village. These vary from 30 to 50 feet in diameter and are all of the circular form. This village is well situated for defense, as it can be approached readily from the west side only. There is one main plaza or court which appears to have been completely closed. Attached to this on the east

are two sections which partially inclose another and smaller court. Three detached sections stand at a little distance from the main quadrangle.

No. 37. Houiri (fig. 24).—On a low mesa on the east bank of the creek just opposite Homayo is the ruin of Houiri. Here again is found one great hollow quadrangle closed except at one corner, another smaller one inclosed by three detached buildings, and two entirely independent sections. The main quadrangle has a perimeter of approximately 1,350 feet. The width of the sections making up the village varies from 25 to 50 feet, the number of rooms in width being indefinite. There are the remains of ten circular kivas, ranging from 35 to 50 feet in diameter.

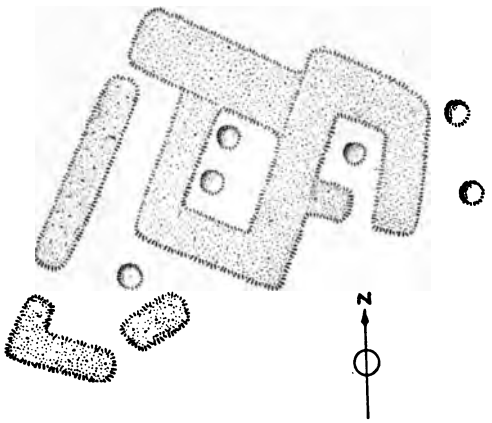


FIG. 23.—Ground plan of Homayo.

No. 38. Sepawi (fig. 25).—In the valley of El Rito creek about five miles below the Mexican village of the same name are the ruins of Sepawi, one of the largest pueblos to be found in the entire area described in this bulletin. It is now reduced to low rounded mounds. There is a little woodwork still to be seen in the débris of the buildings. Six circular kivas are visible, one of which was only partially subterranean. The kivas range from 30 to 55 feet in diameter. The village consists of one principal structure forming two incomplete rectangles and ten detached buildings, so disposed as to form a number of secondary courts.

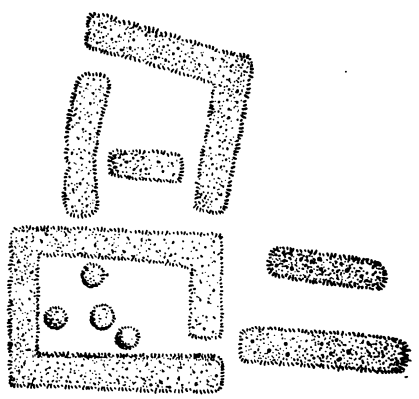


FIG. 24.—Ground plan of Houiri.

No. 39. Cristone and other ruins above Abiquiu.—The archeology of this portion of the Chama drainage is too little known to attempt at this time a detailed description of the ruins. It has been known for many years that this district is rich in remains of antiquity, but the study of them has been overlooked. The presence of ruins at many points on both sides of the Chama is reported and here is a splendid

field for the investigator. A general idea of the character and extent of these ruins may be obtained from the report of Prof. E. D. Cope, paleontologist, in which he gives an account of those in one district, Gallinas creek, where he was encamped in 1874. I quote at length from his report:[a]

"My attention was first called to the archeology of the region by observing that the conic hills just mentioned appeared to be in many instances crowned with stone structures, which on examination proved

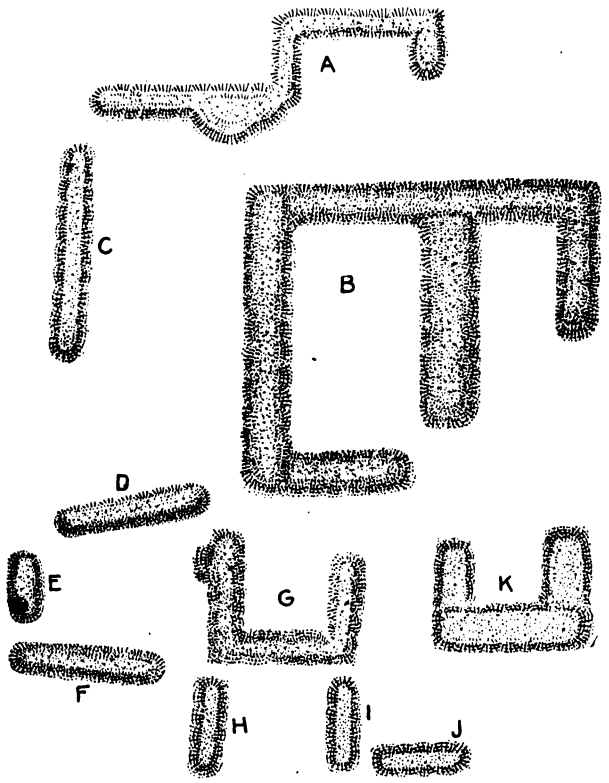


FIG. 25.—Ground plan of Sepawi.

to be ruined buildings. These are round or square, with rounded angles, and from 15 to 25 feet in diameter. The walls are 2 and 3 feet in diameter, and composed of stones of moderate size, which have been roughly dressed or built without dressing into solid but not very closely-fitting masonry. The walls remaining measure from 10 feet high downward. . . . A building more or less exactly agreeing with this description was found on the summit of every hill of a conical form in the vicinity. Their form is probably due to the shape of the

[a] Annual Report of the Chief of Engineers for 1875, Appendix L L.

hill, as they were differently built on the level hog-backs. None of the circular buildings were found to be divided, nor were any traces of such buildings observed on lower ground. . . .

"In riding past the foot of the precipice I observed what appeared to be stone walls crowning its summit. Examination of the ridge disclosed the fact that a village, forming a single line of thirty houses, extended along its narrow crest, twenty-two of them being south of the causeway and eight north of it. The most southern in situation is at some distance from the southern extremity of the hog-back. . . . It is built on the western slope of the rock, a wall of 12 feet in height supporting it on that side, while the narrow ledge forming the summit of the ridge is its back wall. It is square, 3.355 meters on a side, and has a floor leveled with earth and stones. . . . The second house is immediately adjoining and is surrounded by an independent wall, that on the lower side of the ridge being still 12 feet in height. The length of the inclosure is 4.69 meters and the width 2.68 meters; full sized scrub-oak and sage brush are growing in it. The stumps of two cedar posts remain, one 5 the other 8 inches in diameter. The third house adjoins No. 2, but is surrounded by a distinct wall, except at the back or side next the precipice, where a ledge of rock completes the inclosure. The latter is 4.02 meters long. . . .

"Beyond these ruins is an interval of 69 meters, where the summit of the rock is narrow and smooth. . . . The walls of an oval building follow, which inclose a space of 4.69 meters. They are 2 to 2½ feet in thickness, and stand 8 feet high on the western side; the eastern wall stands on the sheer edge of the precipice. A building adjoins, with the dividing-wall common to the preceding house. Its east and west walls stand on parallel ledges of the sandstone strata. . . Diameter of this inclosure 5.37 meters. A space of 15.4 meters follows, with precipices on both sides, when we reach house No. 6. The eastern wall stands 5 feet high on the summit of the precipice, from which a stone might be dropped to the ground, perhaps 350 feet below. Only 8 feet of the western wall remained at the time of my examination. The inclosure is 6.04 meters long, and not quite so wide, and is divided transversely by a wall, which cuts off less than one-third of the apartment. In one of the opposite corners of the larger room is the stump of a cedar post 5 inches in diameter. This house can only be reached by climbing over narrow ledges and steep faces of rock. House No. 7 follows an interval of 42.30 meters. Its foundation-wall incloses an irregular square space 4.70 meters long and 3.69 meters wide; it is 11 feet high on the western side, and very regularly built and well preserved; on the east side it is 8 feet high, and is interrupted by a doorway of regular form. . . .

"The crest of the ridge is without ruins for 52.34 meters farther, then a building follows whose inclosed space is an irregular circle of 4.70

meters diameter. A transverse summit-ledge forms its southern wall, but the remaining portion is remarkably massive, measuring 3 feet in thickness. Its western wall is 12 feet high, and contains many huge stones, which four or five men could not lift unaided by machinery. Several scrub-oaks of 3 inches in diameter grow in this chamber, and stumps of the cedar posts that supported the roof remain. Here follows a row of ten similar ruined houses, measuring from 3.35 to 6.24 meters in length. Of these No. 13 is remarkable for containing a scrub-oak of 13 inches in diameter, the largest that I have seen in the country, and the species is an abundant one. In No. 14 the remaining western wall is 15 feet in height. There was a good deal of pottery lying on the western slope of the rock, but of flint implements and chips I found but few. All of these ruins contain full-grown sage bushes. No. 18 is the largest ruin; the length of its inclosure is 8.62 meters, and the width 6.71 meters; its west wall is 6 feet high; the floor is overgrown with sage of the largest size. This building stood 51 meters from No. 17; 12.80 meters northward the ridge descends slightly to the level of the causeway already mentioned. Here are five more ruined buildings of the same average size as the others, interrupted by but one short interval.

"From this depression, that part of the hog-back which is north of the causeway rises abruptly in a perpendicular face. It is composed principally of two layers of the sandstone, dipping at 45° W., which are separated by a deep cavity from a point 15 feet from the base upward. This niche has been appropriated for a habitation, for it is walled to a height of 8 feet from its base. The foot of the wall is quite inaccessible, but by climbing round the eastern face of the precipice a ledge is found at the base of the projecting stratum, which forms the east wall of the inclosure. This was scaled by means of a staircase of stones, a number of which were in position at the time of my visit. The remaining portion of the hog-back is elevated and smooth, and the foundation stones only of several houses remain. One of these contain two stout posts, of which 4 feet remain above ground. The last house is near the end of the ridge, and is bounded by a wall 10 feet in height, which forms its western side.

"The walls of these houses are built of a mortar of mud, mixed, in many cases at least, with ashes, judging from the abundant specks of charcoal which it contains. It is not of good quality, and has weathered much from between the stones. . . .

"This town I called Cristone. The same hog-back recommences a little more than a mile to the north, rising to a greater elevation, say 600 or 700 feet above the valley. The east side is perpendicular, while the dip of the west side is 60°, and sometimes even a higher angle. On this almost inaccessible crest I could see from the valley the walls of ruined stone buildings, such as I have just described. . . . In

the opposite direction I observed a similar ruin on an outlying hill adjacent to the southern portion of the southern hog-back. This one is of larger size than any of the others. . . .

"In other localities ruined stone buildings occupy the flat summits of mesa hills of the bad-lands, often in very elevated and well-defended positions. It was a common observation that the erosion of the faces of these bluffs had undermined the foundations of the houses, so that their wall-stones, with the posts, were mingled with the pottery on the talus below. At one point foundation-walls stand on an isthmus, connecting a butte with the mesa, of which a width of 20 feet remains, but which is furrowed with water channels. Here Eocene fossils and pottery, including a narrow-necked jug, were confusedly mixed together. At another point the narrow summit of a butte, of nearly 200 feet elevation, is covered with remnants of stone buildings which extend for a length of 200 yards. The greater part of them had been undermined, and the stones were lying in quantities on the talus at the time of my visit. At one end of the line the bases of two rectangular walls, perhaps of towers, appeared to have been placed as supports to the terrace. Very dry cedar posts occur among the ruins, and three such, standing upright on the summit of the butte, mark a spot as yet unaffected by the disintegration of the cliff. . . . At a remote portion of the ruins, on a remaining ledge, I found a square inclosure formed of stones set on edge, three stones forming each half of the inclosure. . . . The number of buildings in a square mile of that region is equal to if not greater than the number now existing in the more densely populated rural districts of Pennsylvania and New Jersey. . . . In general, I may say that the number of ruins I found was in direct proportion to the attention I gave the matter; where I looked for them I invariably found them in suitable situations.

"Perhaps the most remarkable fact in connection with these ruins is the remoteness of a large proportion of them from water. They occur everywhere in the bad-lands to a distance of twenty-five miles from any terrestrial source of supply."

III. Ruins of the Jemez Valley[a]

In the lower Jemez valley there are three inhabited pueblos, Jemez, Sia, and Santa Ana, and there are perhaps as many as twenty or thirty deserted sites, situated mostly in the upper valleys, some of which must have been villages of considerable importance. All are of the usual pueblo type, differing somewhat from the more northern villages of like situation, but typical of the middle region, to which they belong.

[a] From Notes on the Archeology of Jemez, New Mexico, by W. H. Holmes. American Anthropologist, vol. 2, 1889, pp. 1–26.

The early days of Spanish occupancy of the Jemez country, 1540 to 1700, witnessed many stirring events of conquest, revolt, and reconquest, and numerous interesting details culled from the Spanish chronicles are given by Bandelier in his Final Report. The Jemez pueblos were first visited by the Spaniards under Francisco de Barrionuevo in 1541. Oñate, in 1598, saw eight villages, and others were mentioned to him. Bandelier says that at the time of his visits in 1880–1885 the Jemez gave him the names of seventeen of the old pueblos. He believes that the numerous small villages were gradually consolidated into two, and finally into one—the present pueblo.[a]

No. 40.—About half a mile below the village of Jemez are two anciently inhabited sites that show no distinctly marked architectural remains, but the ground is strewn with various minor relics. No specimen was found that suggested Spanish influence, and all varieties could be duplicated from the more northern sites where Spanish influence was never felt. All other sites visited in the valley exhibit in different degrees traces of modern pueblo influence if not of the presence of the Spaniard. . . . One of the sites is on the low east bank of the creek near the water's edge, and the other on the western side nearly opposite. Similar traces marking other ancient sites are found in various parts of the valley, and probably represent the exclusively prehistoric occupancy.

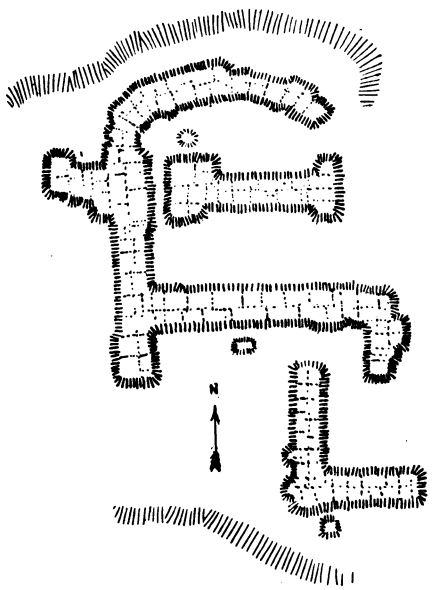


FIG. 26.—Ground plan of ruined pueblo three miles west of Jemez.

No. 41.—On a partially isolated bit of mesa about three miles west of Jemez is a considerable ruin, which does not bear evidence, however, of long continued occupancy. The summit of the mesa is without trees and almost without soil, and water must have been obtained from far below. The walls of the ruin are well defined, and stand in places five or six feet in height; but they are formed of rough, loosely laid stones, and are extremely thin and unstable. They could not have been high at any time, as there is a marked absence of débris, and the dearth of pottery and kitchen refuse would seem to stamp the place as a temporary or emergency abode. The site is favorable for

[a] A. F. Bandelier, in Papers of the Archæological Institute of America, Amer. series, IV, Final Report. part II, p. 208, Cambridge, Mass., 1892.

defense, and there are traces of defensive walls along the margin of the summit. The buildings are irregular in plan and comprise three groups, the full length of the groups being about 450 feet and the width 350 feet.[a] A sketch plan is given in figure 26. . . . There appears to be no definite historic reference to this site.

No. 42.—Two unimportant ruined structures occur three and a half miles northeast of Jemez pueblo, on a bluff overlooking Vallecito creek (fig. 27). They are rather unpretentious piles, and by their advanced state of decay would seem to have been long deserted. There are no positive indications of occupancy by post-Spanish inhabitants. . . . Fragments of the archaic varieties of pottery occur, and the usual forms of stone implements. The lower ruin, *a*, about 150 feet above the creek level, is squarish in outline, and is about 175 by 180 feet in extent. It incloses a court in which a shallow circular depres-

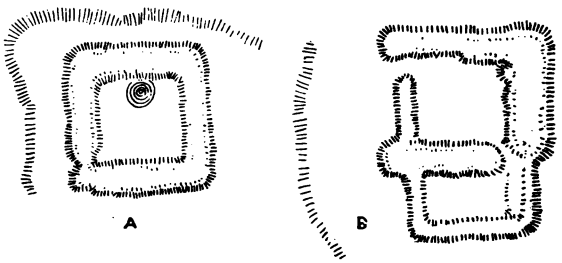


FIG. 27.—Ground plan of ruined pueblo on Vallecito creek.

sion occurs. The ridges of débris are four or five feet in height and two or three rooms in width. The upper structure, *b*, is about 150 by 200 feet in extent, and embodies two courts. The walls are very much reduced.

No. 43. Patokwa.—Two ruined pueblos, extremely interesting on account of their connection with the events of the Spanish conquest, are found at the confluence of the two main branches of Jemez creek, six miles above the present Jemez pueblo. One is on a low mesa point between the two streams, and the other occupies the end of the great mesa several hundred feet above. The lower site (fig. 28, *a*) is one that would naturally be selected for residence by primitive peoples, and may well have been a principal pueblo of the valley in pre-Spanish times. One portion of the ruin is a large mound of débris from which the larger stones have been removed. This represents the prehistoric town. The other portion is in a much better state of preservation, and consists of lines of fallen house rows surrounding two great courts. That this structure is of late date is clearly indicated, not only by its state of preservation but by the presence at one corner of the ruins of a Catholic church. . . .

[a] The measurements given in this [Professor Holmes'] paper are all mere estimates, and the orientations are only approximate.

No. 44. Astialakwa.—An interesting group of ruined buildings is situated on the high and almost inaccessible promontory, a mesa remnant, overlooking the ruin at the confluence of the east and west branches of Jemez creek, just described. The ruins stand a short distance back from the front of the promontory and near the brink of the cliffs on the west side (fig. 28, *b*). The walls are of unhewn stone, and bear evidence of hurried and apparently incomplete construction, there being a notable absence of débris of any kind. Traces of mortar occur in the walls, and a little plaster still remains on the interior surfaces. The walls are in no place more than five or six feet in height. The buildings are in a number of groups, as indicated roughly in the sketch. . . . There can be little doubt that this village was built at the period of Spanish encroachment by the people of the villages below as a place of refuge and defense, and it was here, according to historical accounts, that they were defeated by the Spaniards and compelled to descend to the lowlands. . . .

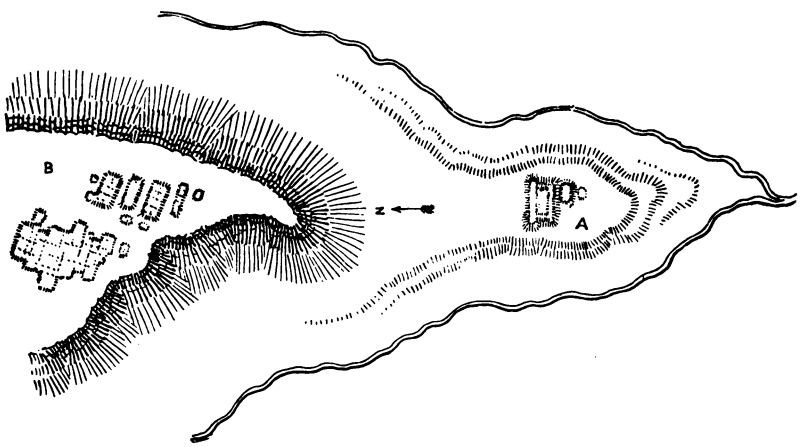


FIG. 28.—Ground plan of *a*, Patokwa, and *b*, Astialakwa.

It is an interesting fact that along the margins of the precipice are traces of defensive works built of stone.

No. 45. Giusewa.—A ruined pueblo of considerable importance is situated at Jemez Hot Springs, twelve miles above Jemez pueblo. At present the chief feature of interest on this site is the ruin of a Spanish church, with its heavy walls and fortress-like tower. It has been constructed of materials derived from the immediate vicinity. The tower and upper parts are of the impure friable limestones of the promontory against which the foundations are built. The lower end of the church and the walled enclosure extend down to the border of the arroyo, and the latter has been built of heterogeneous materials. The adobe mortar has been made from the débris of ancient house sites and is full of fragments of pottery, obsidian chips, and charcoal. . . .

Bandelier says that this pueblo "formed several hollow quadrangles at least two stories high. It contained about eight hundred inhabitants. The church is a solid edifice, the walls of which are erect to the height of ten or fifteen feet, and in places nearly eight feet thick. It is not as large as the one at Pecos, and behind it, connected with the choir by a passage, rises an octagonal tower, manifestly erected for safety and defense. Nothing is left of the so-called 'convent' but foundations. The eastern houses of the pueblo nearly touch the western walls of the church, and from this structure the village and a portion of the valley could be overlooked, and the sides of the mesas easily scanned. Ginsewa [Giusewa] is an historical pueblo. It first appears under the name of Guimzique in 1626. It seems that it was abandoned in 1622, on account of the persistent hostility of the Navajos, who had succeeded in scattering the Jemez tribes. In 1627 Fray Martin de Arvide obtained permission from his superior, the custodian Fray Alonzo de Benavides, to attempt to gather the tribe again in its old home. The efforts of the monk were successful, and the Jemez Indians settled in two of their former pueblos—at Ginsewa and at Amoxiumqua."[a]

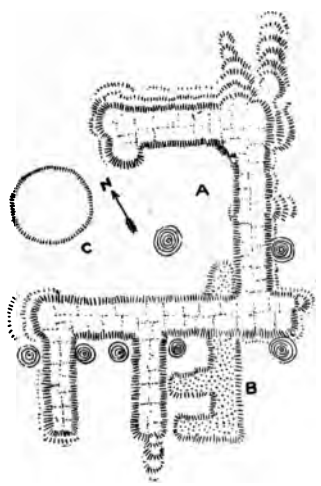


FIG. 29.—Ground plan of Amoxiumqua.

No. 46. Amoxiumqua.—On the high mesa overlooking Jemez Hot Springs on the west are the remains of another large and ancient pueblo, which is reached by a tedious and very precipitous trail. The ruin, a sketch plan of which is given in figure 29, stands in an open space in the forest, about a quarter of a mile from the brink of the canyon, and from its walls a glimpse can be had of the lower valley of Jemez creek. It is larger than any of the ruins in the valley below, and appears to represent two periods of occupancy, an ancient or pre-Spanish one, and a more modern one, probably of the Spanish period, the later village having been built upon the ruins of the earlier. Bandelier states[b] that Amoxiumqua was abandoned previous to 1680. In the accompanying sketch plan (fig. 29) the old town, which is a mere heap of débris and quite limited in extent, is indicated by a stippled or dotted surface. The newer construction consists of a series of connected ridges, two or three rooms in width, and from a few feet to eight or ten feet in height. Some of the room interiors are exposed and still retain the coatings of plaster, and the ceilings are of logs with

[a] Final Report, pp. 204-205.

[b] Ibid., p. 208.

transverse layers of brush or splinters to support the earthen covering. The stones of the walls, which have been derived from the cliffs in the vicinity, are rather even in size, and have been in cases slightly dressed on the outer surface. The length of the ruin from northeast to southwest is about 350 yards, and the greatest width is some 200 yards. The rows of ruined buildings have a width of from 20 to 30 feet. Seven circular kiva-like depressions are associated with the ruin. Six of these are approximately 20 feet in diameter, and the sixth, a part of the encircling wall of which is intact, is 32 feet in diameter. On the side opposite the canyon is a large depression, 150 feet in diameter and five or six feet deep, which contains a pool of water, and was undoubtedly used as a reservoir. . . .

No. 47.—Another ruined pueblo of large size and comparatively well preserved is situated in an open space in the forest on the summit of a spur of the plateau overlooking the canyon of the first northern tributary of the west fork of Jemez creek and some two miles west of the great ruin (Amoxiumqua) overlooking Jemez Hot Springs. This ruin was seen from the opposite side of the canyon, but lack of time forbade an attempt to visit it.

No. 48.—A ruin of more than usual interest is situated on the west bank of San Diego creek, about 15 miles above Jemez pueblo. At the base of the low terrace on which this ruin stands, and between its base and the creek, the Survey camp was established. Two ravines rising close together in the plateau, face to the west, separate as they approach the creek bed, leaving a somewhat triangular terrace remnant with gently sloping surface, on which the ruin is situated. This terrace at the lower margin is about 50 feet in height and 150 yards long, and is perhaps 100 yards deep to the base of the steep slope on the west. The ruin includes one principal centrally-placed group of structures and four or five inferior structures, as indicated on the ground plan (fig. 30). The central group, *a*, consists of two wings of unequal length and from 30 to 60 feet in width, connected at the upper end by a transverse group of razed chambers. The length of the longer wing is about 320 feet, and of the other about 150 feet. The mass of débris indicates the outline of the buildings with perfect clearness and is in places 10 feet in height. The chambers were numerous and irregular in arrangement, but the state of the ruin is such as to make the details of the plan difficult to trace. At the upper end of the intramural space is a kiva depression 20 feet in diameter and two or three feet deep; and at the lower end, near the edge of the terrace and next the wall of the longer wing, is another of like diameter and about four feet in depth. On the opposite side, against the wall of the shorter wing, is a stone heap some 10 feet in diameter and a few feet in height. North of the longer wing of the central structure, 40 feet distant, and extending along the northern margin of the terrace, is a ruin, *b*, some

30 feet wide and 150 feet in length, and in places six feet in height, presenting characters in the main identical with those of the central structure. In the space between the two clusters is a third circular depression, corresponding in size with those previously mentioned.

Higher up the sloping terrace on the northern margin is a small ruin mass, *c*, very much reduced. On the south, separated from the corner of the shorter wing of the main building by a space about 10 feet in width, is a fourth ruin mass, *d*, about 40 feet in width by 120 feet in length, the lower end of which extends well down to the margin of the terrace. Its features correspond closely with those of the other structures. South of this again, and 20 feet away on the narrow point of

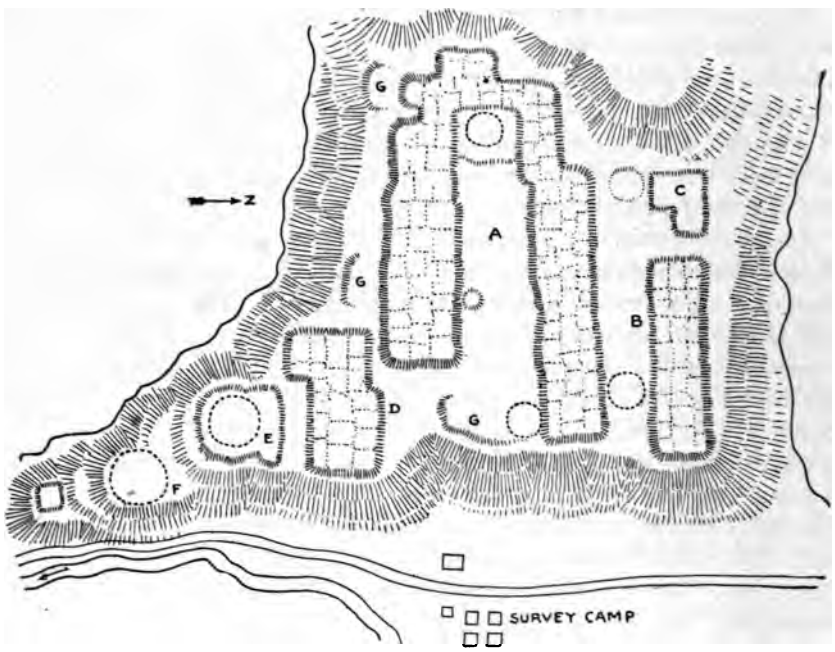


FIG. 30.—Ground plan of ruined pueblo 15 miles above Jemez.

the terrace, are the remains of a minor structure, inclosing a kiva depression 30 feet in diameter and about 4 feet in depth; and below this, again, is another circular depression 36 feet in diameter and 5 feet in depth, with which no ruins are connected. Still lower down and at the extreme point of the terrace, 80 feet from the depression just described, is a small ruin mass about 12 feet square and of no considerable height.

An interesting feature of this pueblo is the occurrence of three or four refuse middens, lying on the slope of the terrace near the walls of the buildings. These consist of blackish earth with many impurities, including bones of animals, fragments of pottery, and various imple-

ments of stone. On these heaps were growing dwarfish wild potato plants, the tubers, although ripe, not being more than half an inch in diameter. This ruin presents every appearance of antiquity, and, so far as observed, contains no definite trace of the presence of the white man. The fallen roof timbers, which still remain among the débris in some of the chambers, had been cut with primitive tools. . . .

No. 49.—Sixteen miles above Jemez pueblo, occupying a low sloping terrace on the west side of the valley and 30 or 40 yards from the creek, is a small pueblo group, of usual type (fig. 31). It is about 40 feet above the creek bed and covers a space some 50 yards long, facing the stream, and 50 yards deep, reaching back to the steeper ground. The low crumbling walls of small irregular stones indicate a squarish structure of numerous rooms, including an open space or court, in which are two circular depressions, probably the remains of kivas. A third depression occurs in the midst of the ruined walls on the north side. . . .

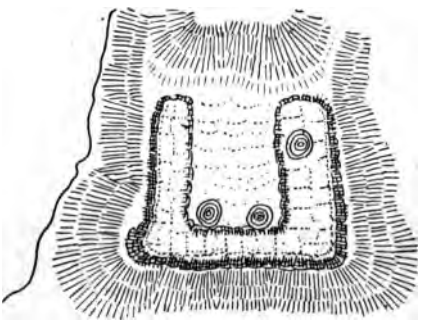


FIG. 31.—Ground plan of ruined pueblo 16 miles above Jemez.

Scattered stone lodges.—An important feature of the antiquities of Jemez valley is the ruins of small stone houses that are encountered by the explorer at every turn in the tributary valleys, on the steep slopes of the plateaus, and scattered over the upper surfaces of the wooded tablelands. In the foothills they are seen sometimes occupying very precipitous sites, and in riding through the deep forests of the uplands they may be counted by the score. They consist generally of a single room, rarely of two or more rooms, and the dimensions of the apartments seldom exceed ten or twelve feet. The walls are thin and loosely laid up, and to-day are rarely more than three or four feet in height, the dearth of débris indicating that they could not have been more than one story in height at any time. . . . These houses occur in considerable numbers in the valley of the San Diego near the great bend, 20 miles above Jemez pueblo; in the vicinity of the warm springs, a few miles above the bend; on the plateau east of Jemez springs; and along the terrace-like projections of the western slope of the canyon wall. . . .

The existence of other important ruins exceptionally well preserved has been reported from the high Valle Grande and San Antonio valley on the eastern rim of the Jemez basin; also from the foothills of the Nacimiento range on the upper Guadalupe.

MINOR REMAINS OF ANTIQUITY

From the foregoing account it is seen that the archeological remains of the Jemez plateau are very numerous and of great interest and scientific value. The village-sites of the ancient inhabitants, with all the accessories of sedentary village life, such as kivas, shrines, burial places, fields, irrigation works, lookouts, stairways, and trails, with the vast number of scattered and isolated cliff-dwellings and small pueblos, not forming aggregations that could be called villages, preserve a complete picture of the ancient life of the Southwest. Buried under the débris of buildings and in the graves of the dead are various artifacts of stone, bone, wood, fiber, and clay (pl. XII, XIII), displaying the simple industries and domestic life of the inhabitants. These, together with ceremonial objects, as pipes, fetiches, medicine stones, etc. (pl. XVI), with the symbolic ornamentation of domestic and mortuary pottery (pl. XIV, XV), yield important data relative to the social and religious life of the time. A few illustrations of these various artifacts are included herewith.

The pottery of the region consists mainly of food bowls, preserved to us through the symbolic act of placing food with the dead. But little is found in the houses.

The pottery found consists of the following varieties:

A. Coiled and indented ware, plate XIV, *a*.

B. Smooth undecorated ware, plate XIV, *c*.

C. Incised ware, plate XIV, *d*.

D. Polished decorated ware, plate XIV, *e*.

E. Polished decorated ware, red with glazed ornament, plate XIV, *b*.

Of class A little is found, and this is mostly in fragmentary condition. The pottery of this class was used principally for cooking vessels, some of which were very large. Of class B but little is found. Class C is still more rare. Seventy-five per cent of all the pottery is of classes D and E. This, as before mentioned, consists principally of food bowls, varying from four to sixteen inches in diameter and in practically all cases having both interior and exterior decorations. A few small ollas are found. The clay used was not of first-rate quality. It contained a considerable amount of fine sand and the product was of a rather porous character and quite thick and heavy. Many exceptions to this condition are found, however, in which a much finer clay had been obtained and prepared with great care, making an excellent paste and permitting the construction of fine thin ware. It is noticeable that all pottery of class D is of superior make.

The aboriginal potters had considerable knowledge of colors and handled them with good effect in decoration. Yellow and gray ware was always decorated with black lines (pl. XV). Red ware was almost invariably decorated with black and red lines and with a salt

glaze (pl. xv, *e*, *f*; *h*). Four shades of red were used, two shades of this color being often applied to the same bowl. The system of ornamentation was bold and striking, and in execution ranges from very crude to very good. Representative motives were sparingly used. In at least 90 per cent of all the decorative work a highly developed symbolism is found. Certain symbolic motives are very persistent, displaying many variants, but capable of being reduced to a few fundamental conceptions (pl. xv, *a*, *b*, *d*).

THE PRIVILEGE OF EXCAVATION

This presentation of the antiquities of the Jemez plateau is necessarily incomplete, since there are many sites yet unexplored, but it is hoped that the sketch here given will lend encouragement to further exploration and serve as a nucleus around which additional information may be systematically arranged as gathered from time to time. It should be borne in mind that these ruins are mostly on the Jemez forest reserve, and that excavations on the forest reserves are strictly forbidden unless authorized by the Secretary of Agriculture. The majority of ruins not situated on the forest reserves are on the Indian reservations and public lands, and can be disturbed only by permission of the Secretary of the Interior.

APPENDIX A

AN ACT for the preservation of American antiquities.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall, upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

SEC. 2. That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected: *Provided,* That when such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in behalf of the Government of the United States.

SEC. 3. That permits for the examination of ruins, the excavation of archæological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and War to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe: *Provided,* That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums.

SEC. 4. That the Secretaries of the Departments aforesaid shall make and publish from time to time uniform rules and regulations for the purpose of carrying out the provisions of this Act.

Approved, June 8, 1906.

APPENDIX B

SPECIMEN RECORD FOR CARD CATALOGUE OF RUINS AND OTHER ARCHEOLOGICAL SITES.

BUREAU OF AMERICAN ETHNOLOGY

CATALOGUE OF ARCHEOLOGICAL SITES

STATE, New Mexico. MAP, Pajarito park. SITE, No. 6.
CLASS, Pueblo and cliff-village.
NAME, Tshirege.
LOCATION: DRAINAGE, Rio Grande. Pajarito canyon.
COUNTY, Santa Fe. TOWNSHIP 19 N. RANGE 7 E.
SECTION. Unsurveyed reservation. Jemez forest reserve.

This site occupies a low mesa about 15 miles west of the Rio Grande, 10 miles southwest of San Ildefonso pueblo. Can be reached by wagon road from San Ildefonso to Alamo canyon, thence by trail remainder of distance. Ruins may be seen from abandoned sawmill road 6 miles west of Buckman. This road was formerly much traveled, and the ruins suffered greatly from vandalism. Buildings not seriously injured, but burial mounds much disturbed.

Large pueblo on top and extensive cliff-village (cavate type) in south face of mesa. My work at this site consisted of the exploration of the principal cemetery, southeast corner of the pueblo; the excavation of one kiva, and of 14 rooms in the pueblo; also of one burial crypt in south face of mesa. Map of mesa, ground plan of pueblo, numerous sketches and photographs made.

Collections secured as follows:

Skeletal remains, 75 individuals.
Pottery, 340 specimens, in part fragmentary.
Bone implements, 23.
Stone implements, 96.
Miscellaneous, 85.

All collections were sent to the museum of the New Mexico Normal University, Las Vegas, except skeletal remains, which were forwarded to the U. S. National Museum. Photographs, sketches, maps, plans, etc., also in Normal University museum.

This is an enormous ruin, and the work done represents but a small part of what is necessary to complete the investigation of the site. So far as prosecuted, however, the work is finished and fully recorded.

Results of expedition to be published in preliminary form in the *American Anthropologist*.

(Signed) EDGAR L. HEWETT.

SEPTEMBER, 1900.

O



b



c



d



e



f



a

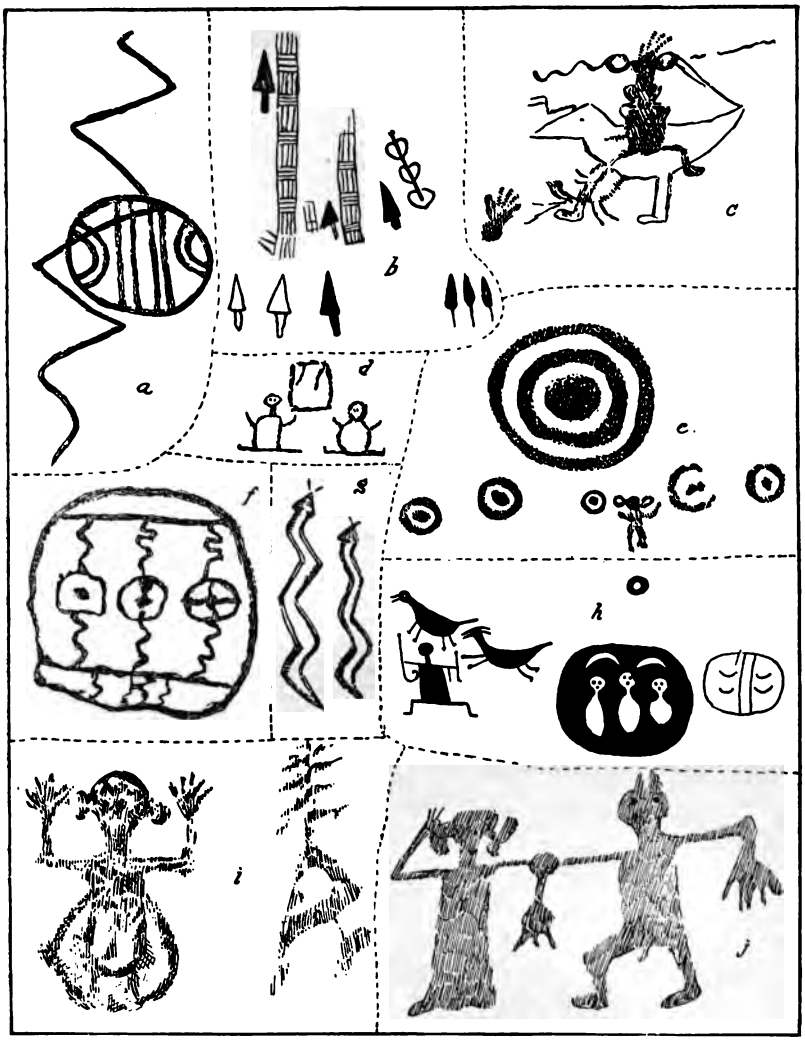
ENTRANCES TO EXCAVATED CLIFF-DWELLINGS



a RESTORATION OF TSHIREGE PUEBLO



b RESTORATION OF CLIFF-DWELLINGS, TSHIREGE





PETROGLYPHS ON THE PUYÉ CLIFFS, PAJARITO PARK



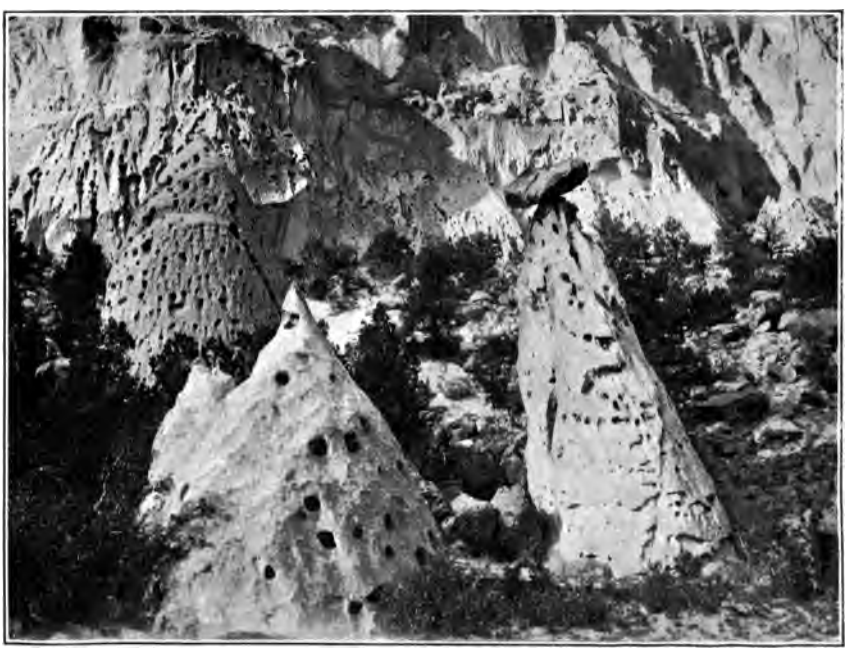
a CLIFF-VILLAGE OF PUYÉ



b RUINS OF PUYÉ PUEBLO

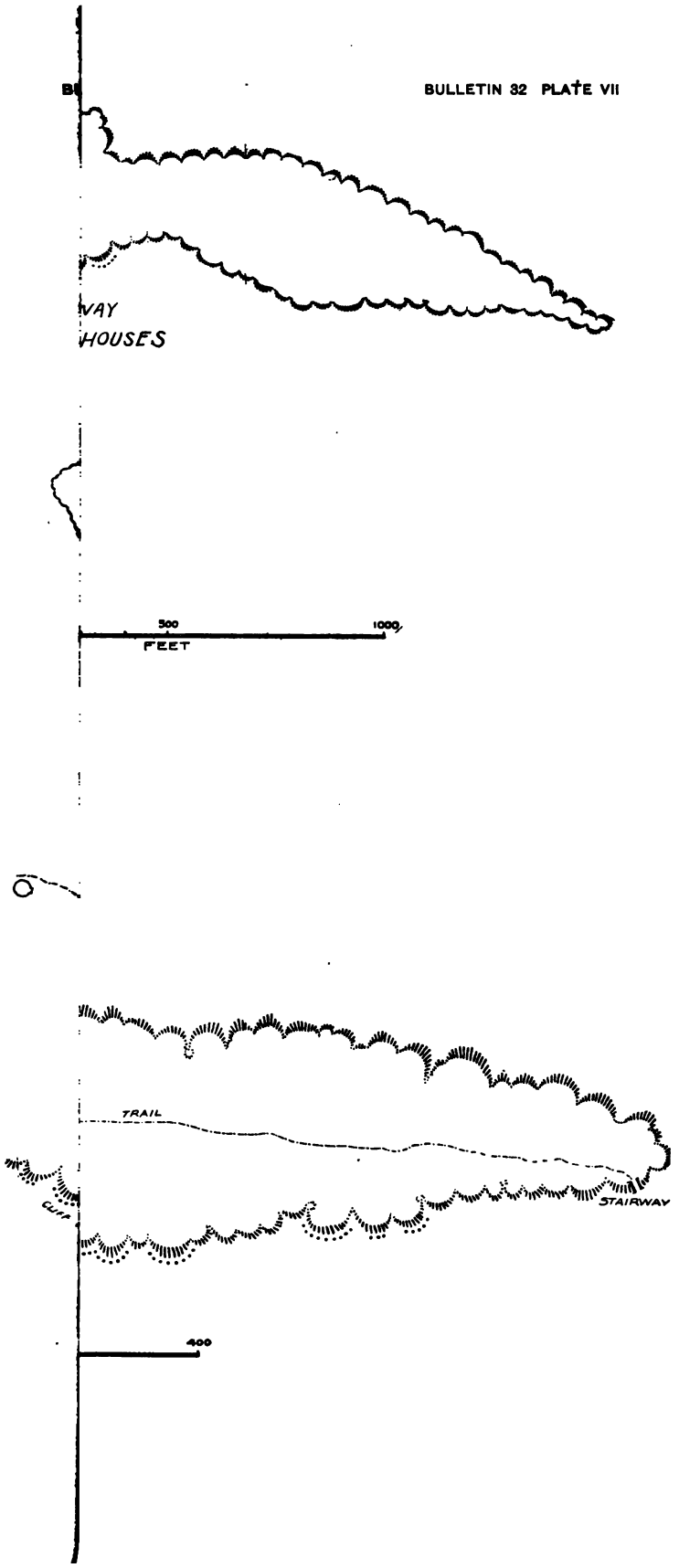


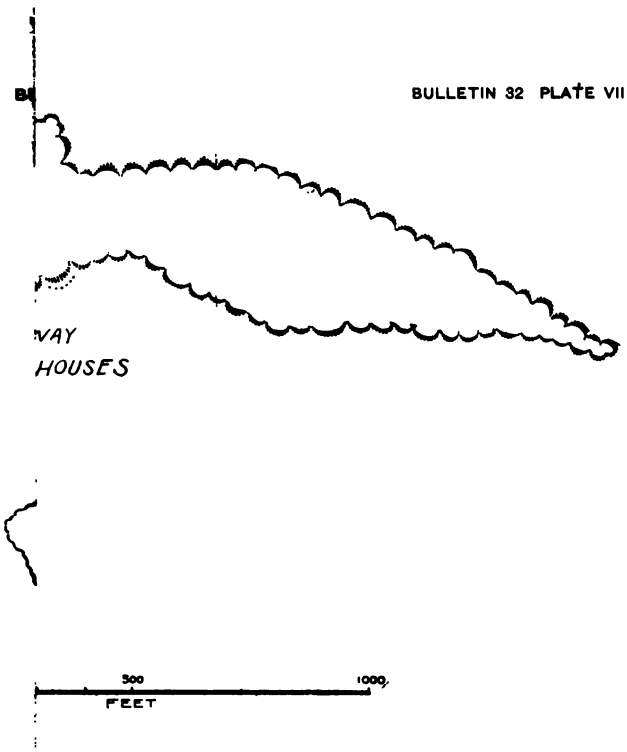
a



b

TENT-ROCK CLIFF-DWELLINGS NEAR OTOWI CANYON


VAY
HOUSES
500
1000
FEET
TRAIL
CLIFF
STAIRWAY
400


VAY
HOUSES
500
1000
FEET
TRAIL
STAIRWAY
400



a



b

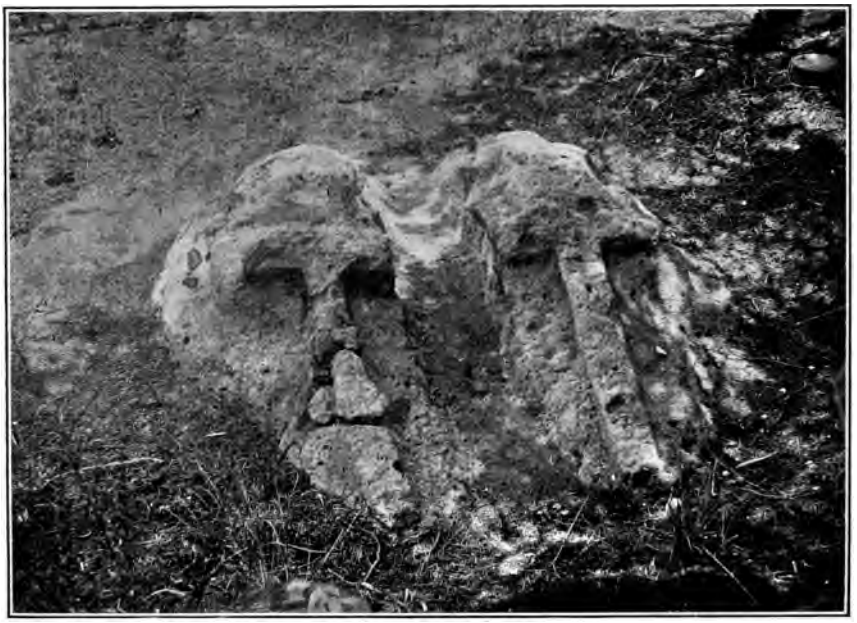
TREES GROWING IN RUINS OF (*a*) PUEBLO AND (*b*) KIVA



a RUIN NO. 18



b PUEBLO OF YAPASHI



a STONE LIONS OF POTRERO DE LAS VACAS (REAR VIEW)



b LA CUEVA PINTADA (THE PAINTED CAVE)



a



b



c

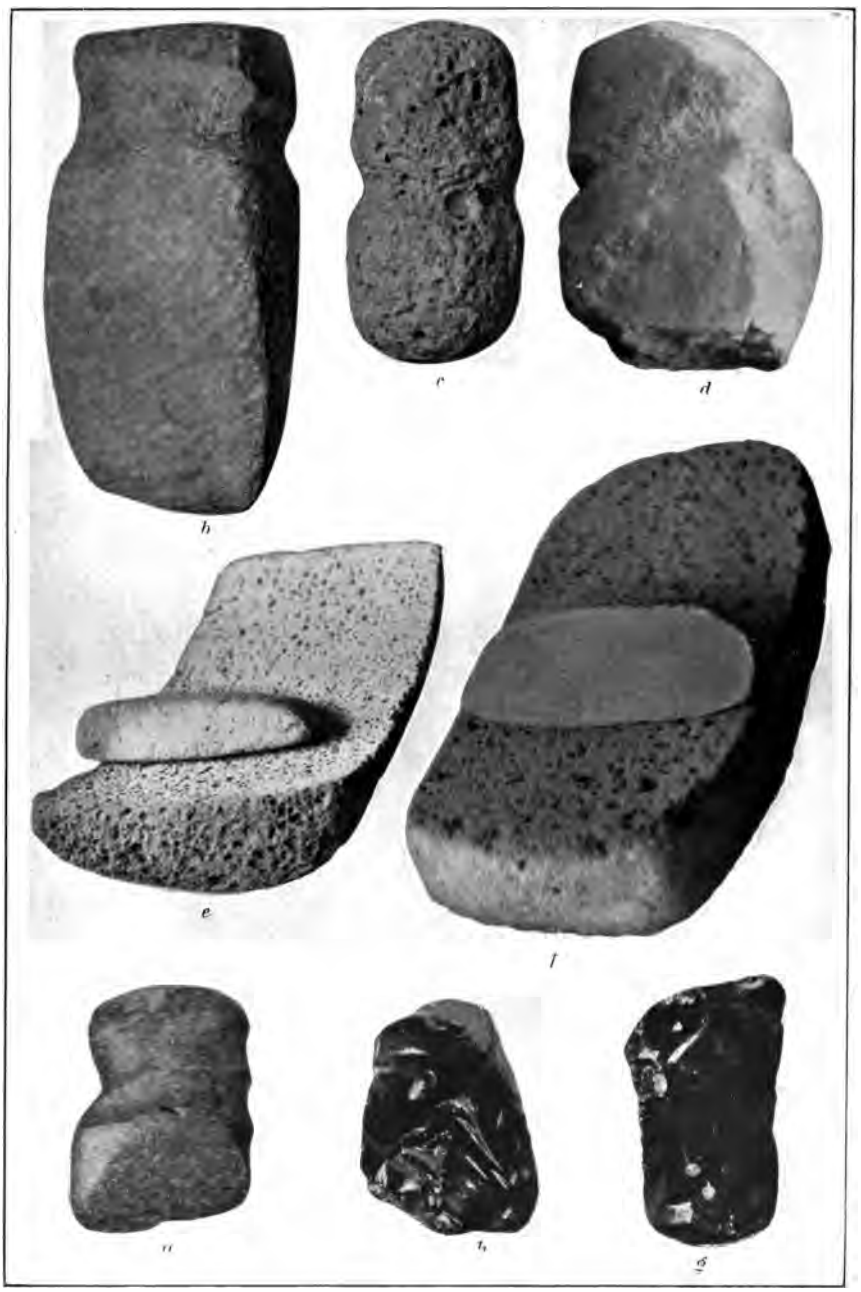


d

a, *b* GALLINAS BAD LANDS

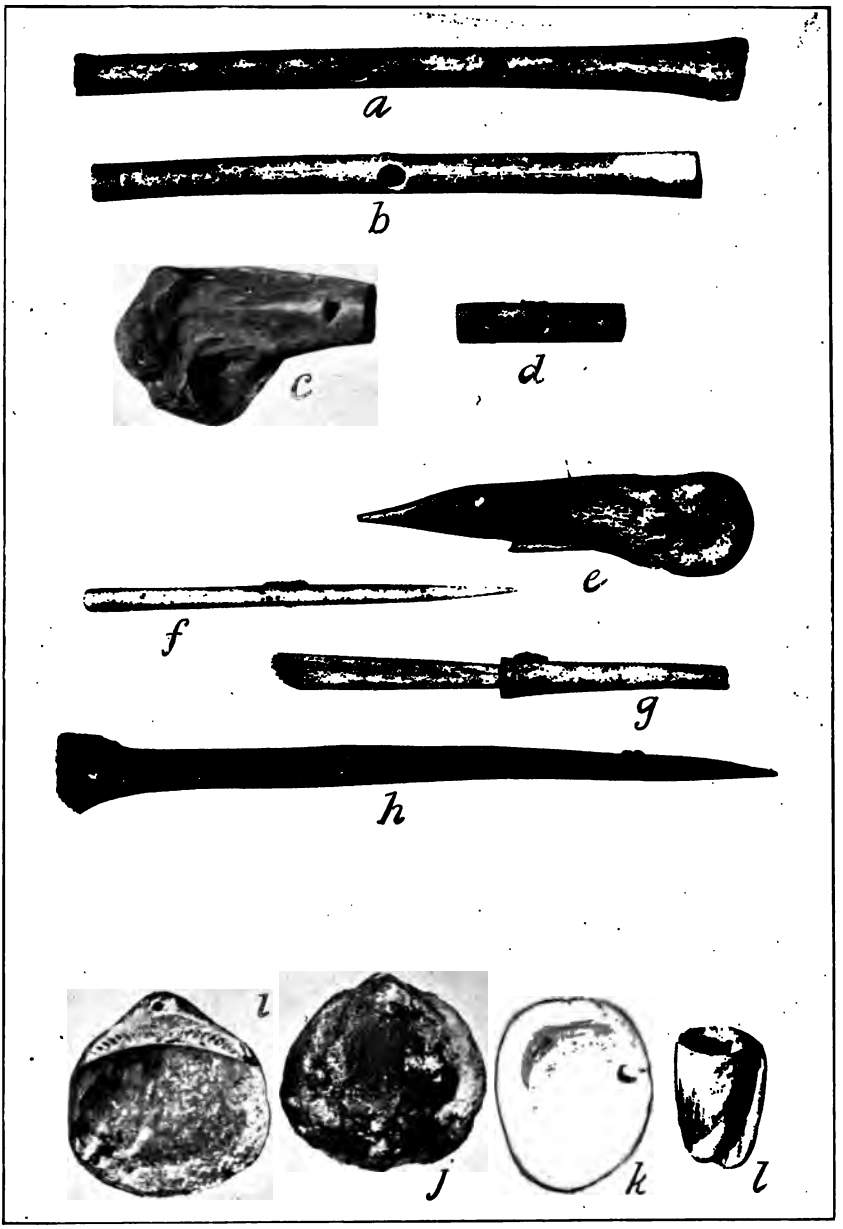
c RUINS OF SHRINE, PAJARITO PARK

d RUINS OF RESERVOIR, PAJARITO PARK



TYPES OF ARTIFACTS OF STONE

a, *b* Hatchets; *c* hammer; *d* maul; *e*, *f* metate and mano; *g*, *h* obsidian flakes



TYPES OF ARTIFACTS OF BONE, SHELL, ETC.

a, *b*, *c*, *d* Bone whistles; *e*, *f*, *g*, *h* bone awls; *i*, *j*, *k*, *l* pendants of shell



a



b



c



d



e

TYPES OF POTTERY

a Coiled ware; *b* bowl with glazed decoration; *c* smooth black undecorated ware; *d* incised ware; *e* polished decorated ware



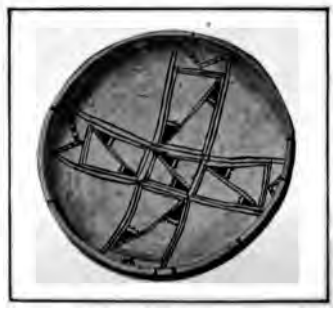
a



b



c



d



e



f



g



h

MORTUARY POTTERY



e



f



h



g



a



c



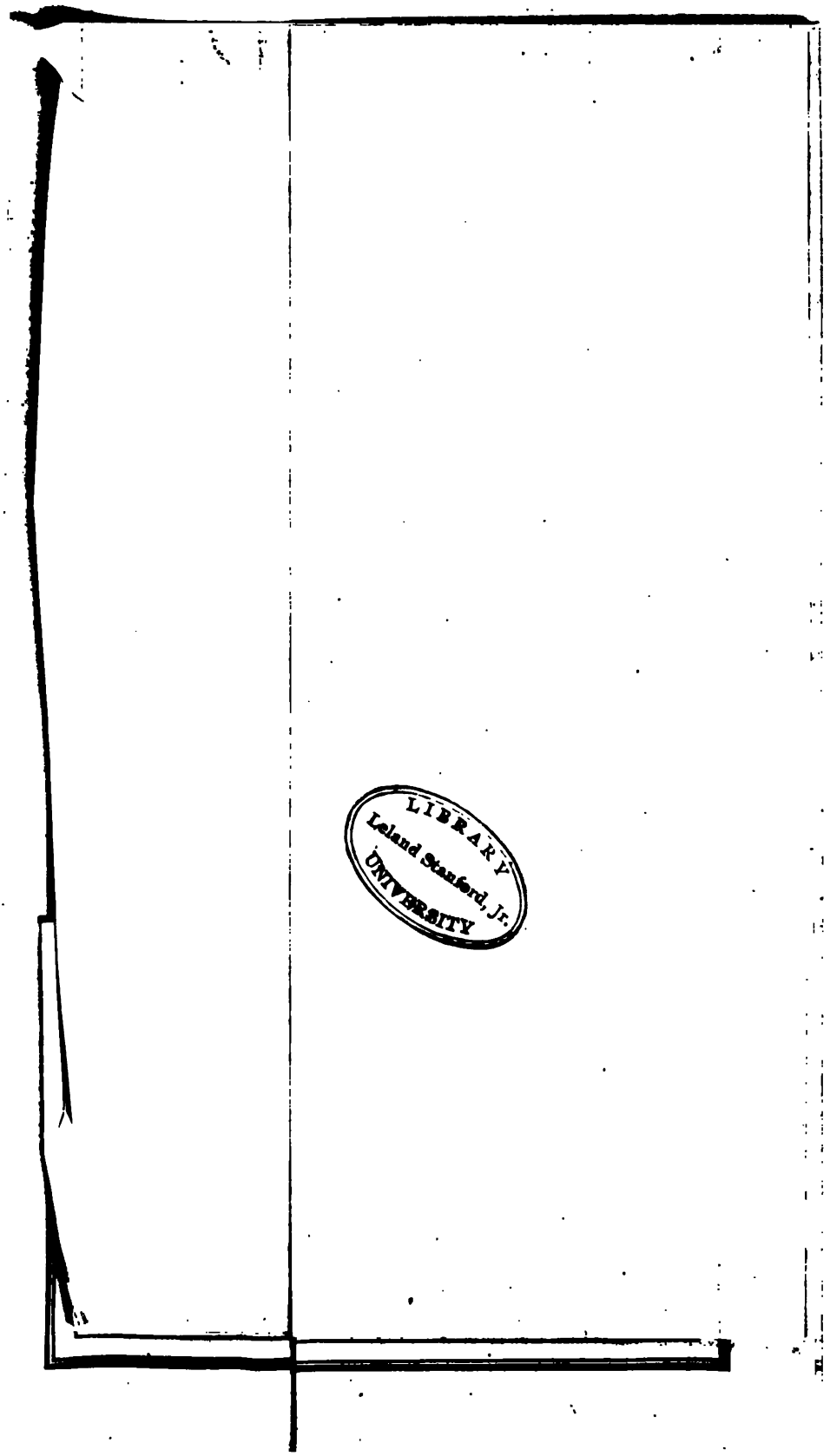
d



b

CEREMONIAL OBJECTS

a War god; *b* mountain lion fetich; *c*, *d* fire stones; *e*, *f* medicine stones; *g*, *h* ceremonial pipes


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